REGIONAL URBAN WATER MANAGEMENT PLAN

FOR

SANTA CLARA VALLEY WATER DISTRICT

PREPARED IN RESPONSE TO AB 797

URBAN WATER MANAGEMENT PLANNING ACT

NOVEMBER 1985

By

SANTA CLARA VALLEY WATER DISTRICT

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1985

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DISTRICT BOARD OF DIRECTORS

Joe Pandit	District 1	James J. Lenihan	District 5
Patrick T. Ferraro	District 2	Sig Sanchez	At Large
Robert W. Gross	District 3	Audrey H. Fisher, Vice Chairman	At Large
Joseph H. Donohue, Chairman	District 4		

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Prepared
by

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CHAPTER I

INTRODUCTION

Urban Water Management Planning Act and Need for Plan

This plan has been prepared as a result of the Urban Water Management Planning Act (Act), Water Code Sections 10610 through 10656 which were added by the Statutes of 1983, Chapter 1009, and became effective on January 1, 1984. A copy of the Act is included in this report as Appendix A. The Act was Assembly Bill 797 while pending before the Legislature. The Act requires that many urban water suppliers prepare an Urban Water Management Plan (Plan). There are several important provisions in the Act which affect urban water suppliers required to prepare a plan, and which must be taken into account in the Plan. These provisions are presented below; however, the sequence used is different from that in the Act so as to present the material in a more effective sequence:

1. "Every urban water supplier serving water directly to customers shall, not later than December 31, 1985, prepare and adopt an urban water management plan . . ." (Water Code Section 10620(a); all future section references are to the Water Code.)

2. "Urban water supplier means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers." (Section 10617)

3. "An urban water supplier indirectly providing water to customers may adopt an urban water management plan or participate in areawide, regional, watershed, or basinwide urban water management planning; provided, however, an urban water supplier indirectly providing water shall not include planning elements in its water

management plan . . . that would be applicable to urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies." (Section 10620 (c))

4. A plan shall include all of the following elements:

A. Contain an estimate of past, current, and projected water use and, to the extent records are available, segregate those uses between residential, industrial, commercial, and governmental uses.

B. Identify conservation measures currently adopted and being practiced.

C. Describe alternative conservation measures, if any, which would improve the efficiency of water use with an evaluation of their costs and their environmental and other significant impacts.

D. Provide a schedule of implementation for proposed actions as indicated by the plan.

E. Describe the frequency and magnitude of supply deficiencies, including conditions of drought and emergency, and the ability to meet short-term deficiencies". (Section 10631) "In addition to the elements required pursuant to Section 10631, a plan projecting a future use which indicates a need for expanded or additional water supplies shall contain an evaluation of the following:

(a) Waste water reclamation.

(b) Exchanges or transfers of water on a short-term or long-term basis.

(c) Management of water system pressures and peak demands.

(d) Incentives to alter water use practices, including fixture and appliance retrofit programs.

(e) Public information and educational programs to promote wise use and eliminate waste.

(f) Changes in pricing, rate structures, and regulations." (Section 10632)

"The plan shall contain an evaluation of the alternative water management practices identified in Sections 10631 and 10632, taking into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors."

"Evaluation of the elements in Section 10632 shall include a comparison of the estimated cost of alternative water management practices with the incremental costs of expanded or additional water supplies, and in the course of the evaluation first consideration shall be given to water management practices, or combination of practices, which offer lower incremental costs than expanded or additional water supplies, considering all the preceding evaluation factors." (Section 10633)

5. "An urban water supplier shall file with the Department of Water Resources a copy of its plan no later than 30 days after adoption. Copies of the amendments or changes to the plans shall be filed with the department within 30 days after adoption. The department shall annually prepare and submit to the Legislature a report summarizing the status of the plans adopted pursuant to this part." (Section 10644)

6. "Each urban water supplier shall periodically review its plan at least once every five years. After the review, it shall make any amendments or changes to its plan which are indicated by the review." (Section 10621)

7. "The adoption of a plan shall satisfy any requirements of State law, regulations, or order, including those of the State Water Resources Control Board, for the preparation of water management plans or conservation plans; provided, that if the State Water Resources Control Board requires additional information concerning water conservation to implement its existing authority, nothing in this

part shall be deemed to limit the Board in obtaining that information." (Section 10653)

8. "The conservation and efficient use of urban water supplies shall be a guiding criterion in public decisions." (Section 10610.4 (f))

9. "Urban water suppliers shall be required to develop water management plans to achieve conservation and efficient use." (Section 10610.4 (c))

Although the Santa Clara Valley Water District (District) is not legally required to prepare a regional urban water management plan, it has chosen to prepare this plan in coordination with, and at the request of, its retail water agencies under the discretion granted in Water Code 10620 (c), and in accordance with the provisions discussed above. The plan includes a description of those water conservation and water management activities that the District currently conducts or may conduct within the next five years on a regional basis in cooperation with its retail water agencies. It includes a discussion of some of the activities being conducted by the District's retail water agencies. These activities will be presented in more detail in the individual plans prepared by those agencies. It is anticipated that many of the retail agencies in the District's service area will use the information in this plan in developing their local plans. However, participation in any regional planning activity is voluntary. As required by Water Code Section 10620, the planning elements in this plan are not applicable to any of the urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies.

Subject to applicable laws and regulations, the District's Board of Directors establishes the policies under which the District operates. As such, the Board has established the policy that the District will encourage the efficient use of water in its service area through voluntary water conservation programs conducted in cooperation with its retail water agencies. The programs in which the District may participate in the future which are discussed in this report will be voluntary programs conducted in

cooperation with its retail water agencies and, therefore, are in keeping with the District's existing policy. Implementation of some of the proposed programs may require Board approval.

Contents of Plan

The intent of this plan is to use, as the primary data resource document, the Department of Water Resources report, "State Water Project, Recommended Water Management Plan for Santa Clara Valley Water District" dated December 1982, as amended in December 1983 ("DWR reference report"). A copy of the DWR reference report is on file in the office of the District's Clerk of the Board. Supplemental information will be included in this plan as needed to update the DWR reference report and to meet the requirements of the Act.

This plan is structured to correspond to the outline presented in the Act, specifically Sections 10631, 10632, and 10633. These sections were previously quoted.

The elements required to be a part of all plans include estimates of past, current, and projected water use, current water conservation measures, alternative conservation measures and schedule of implementation, and frequency and magnitude of supply deficiencies.

The elements required to be included in expanded plans which project a future use that indicates a need for expanded or additional water supplies are included in this plan and concern waste water reclamation, exchanges and transfers of water, management of water system pressure and peak demands, incentives to alter water use practices, public information and educational programs, and changes in pricing rate structure and regulations.

This plan also contains an evaluation of alternative water management practices as required by Section 10633.

CHAPTER II

PAST, CURRENT, AND PROJECTED WATER USE

This Plan contains an estimate of past, current and projected water use and, to the extent records are available, segregates those uses between residential, industrial, commercial and governmental uses. The District sells water wholesale for agricultural and municipal and industrial uses, but (with the exception of minimal surface diversions) does not sell water at the retail level. Consequently, the District records past, current, and projected water use in those two major categories, but does not record the ultimate specific uses of the water. This type of information, to the extent available, will be provided in urban water management plans prepared by local retail water agencies.

The projected information in this chapter is based on long-term average water conditions. Consequently, the demands would be higher and supplies lower during dry periods. Conversely, the demands would be lower and the supplies higher in wet periods.

Service Area Description

The District's total Countywide service area is described in the DWR reference report, but that report deals only with specific plans for the northern part of the District (North County) which is the area that receives State Water Project (SWP) water. This plan will supplement the DWR reference report by including the southern part of the District, South Santa Clara County (South County). The South County area, which includes the Coyote and Llagas Groundwater Subbasins, is shown in Figure II-1.

The South County area extends from Metcalf Road on the north southward to the Pajaro River. The area is bounded on the east by the Diablo Range, which rises 3,000 to 4,000 feet, and on the west by the Santa Cruz Mountains which rise 2,000 to 3,000 feet. The area is irregularly shaped, containing approximately 600 square miles with a 1984 population of about 55,000 people. Most of the urban development is on the valley floor

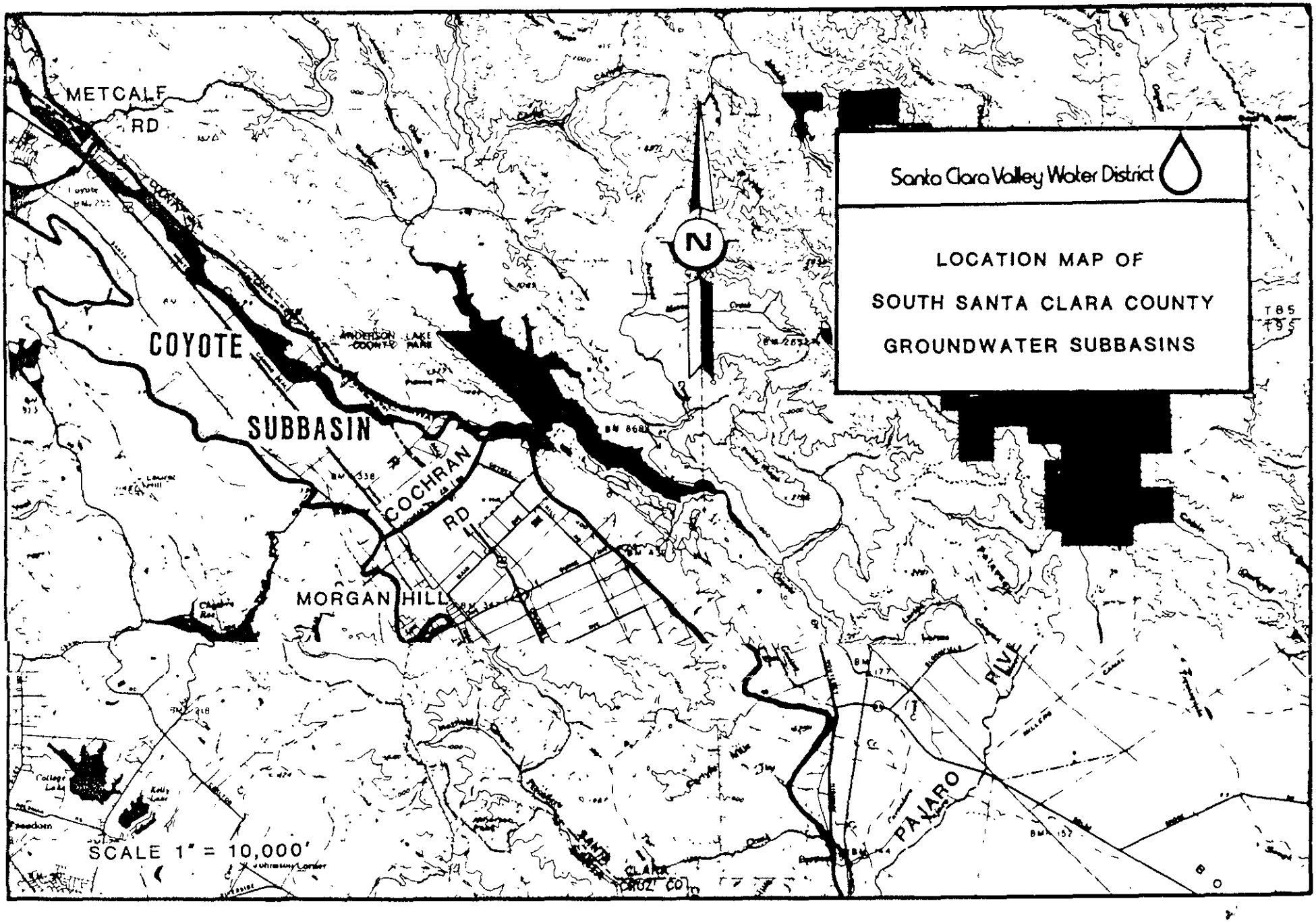

METCALF RD
COYOTE
SUBBASIN
COCHRAN RD
MORGAN HILL
PAJARO RIVER
SCALE 1" = 10,000'
Santa Clara Valley Water District
LOCATION MAP OF
SOUTH SANTA CLARA COUNTY
GROUNDWATER SUBBASINS
N

FIGURE II-1

which has an area of 89 square miles. The area includes all of the Coyote and Llagas Groundwater Subbasins from which almost all of the present water supply in the South County is obtained.

While land use in the South County area still is predominantly agricultural, many areas are urbanizing rapidly, thereby changing the character of the land and the water requirements of the area. The area's major urban centers are the Cities of Gilroy and Morgan Hill with 1984 populations of about 25,550 and 19,050 people respectively.

Water Supply

The water supply situation for the North County area is presented in the DWR reference report.

The South County area currently has two major sources of water: natural groundwater yield, and surface reservoir yield. The District has contracted for future imported water for the area from the federal San Felipe Division project. This project is expected to be in service by mid-1987.

The estimated present and projected firm water supplies available in the South County service area are summarized in Table II-1. The District plans to import sufficient San Felipe water to meet local demands and eliminate groundwater overdraft on a long-term basis in the Coyote and Llagas Subbasins.

Water Demands

The estimated water demands for the North County area are shown in the DWR reference report.

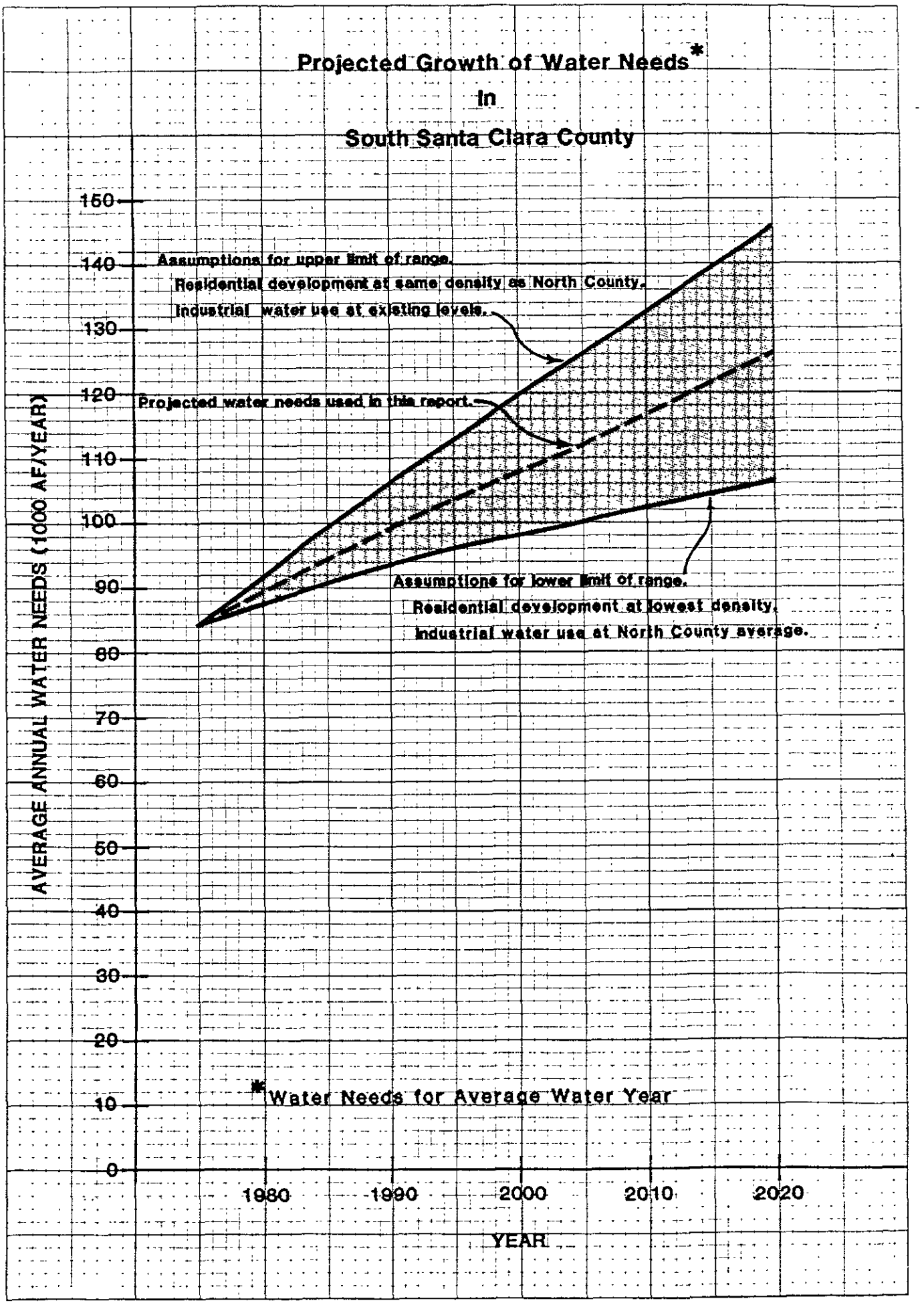
The South County area has a high percentage of developable land that has not yet been converted to its ultimate urban use. Because of uncertainty concerning future growth patterns, the District evaluated a range of water use factors for land that will convert to residential and industrial uses in the future. The result was the range of future water demands shown in Figure II-2. The industrial and residential land use

TABLE II-1

MAJOR WATER SUPPLIES IN SOUTH SANTA CLARA COUNTY
(in acre-feet per year)

	1980	1990	2000	2010
LOCAL SUPPLIES				
Coyote Subbasin				
Natural Groundwater	5,500	5,500	5,500	5,500
Surface Reservoirs	5,300	5,300	5,300	5,300
Subtotal	10,800	10,800	10,800	10,800
Llagas Subbasin				
Natural Groundwater	58,800	58,800	58,800	58,800
Surface Reservoirs	10,400	10,400	10,400	10,400
Subtotal	69,200	69,200	69,200	69,200
Total Local Supplies	80,000	80,000	80,000	80,000
IMPORTED SUPPLIES				
San Felipe Project	-0-	20,000	27,700	36,400
Total Water Supplies	80,000	100,000	107,700	116,400

FIGURE II-2


Projected Growth of Water Needs*
In
South Santa Clara County
AVERAGE ANNUAL WATER NEEDS (1000 AF/YEAR)
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
Aasumptions for upper limit of range.
Residential development at same density as North County.
Industrial water use at existing levels.
Projected water needs used in this report.
Assumptions for lower limit of range.
Residential development at lowest density.
Industrial water use at North County average.
*Water Needs for Average Water Year
1980
1990
2000
2010
2020
YEAR

assumptions for the upper and lower bounds of the range are shown in the figure. The District selected water demands based on the dashed line at the midpoint of the range in Figure II-2. This choice gives the District significant flexibility in responding to future patterns of growth in water needs.

In order to identify more specifically where growth of water demands will occur and to determine where surface deliveries might be feasible, the South County was divided into the following seven water service areas:

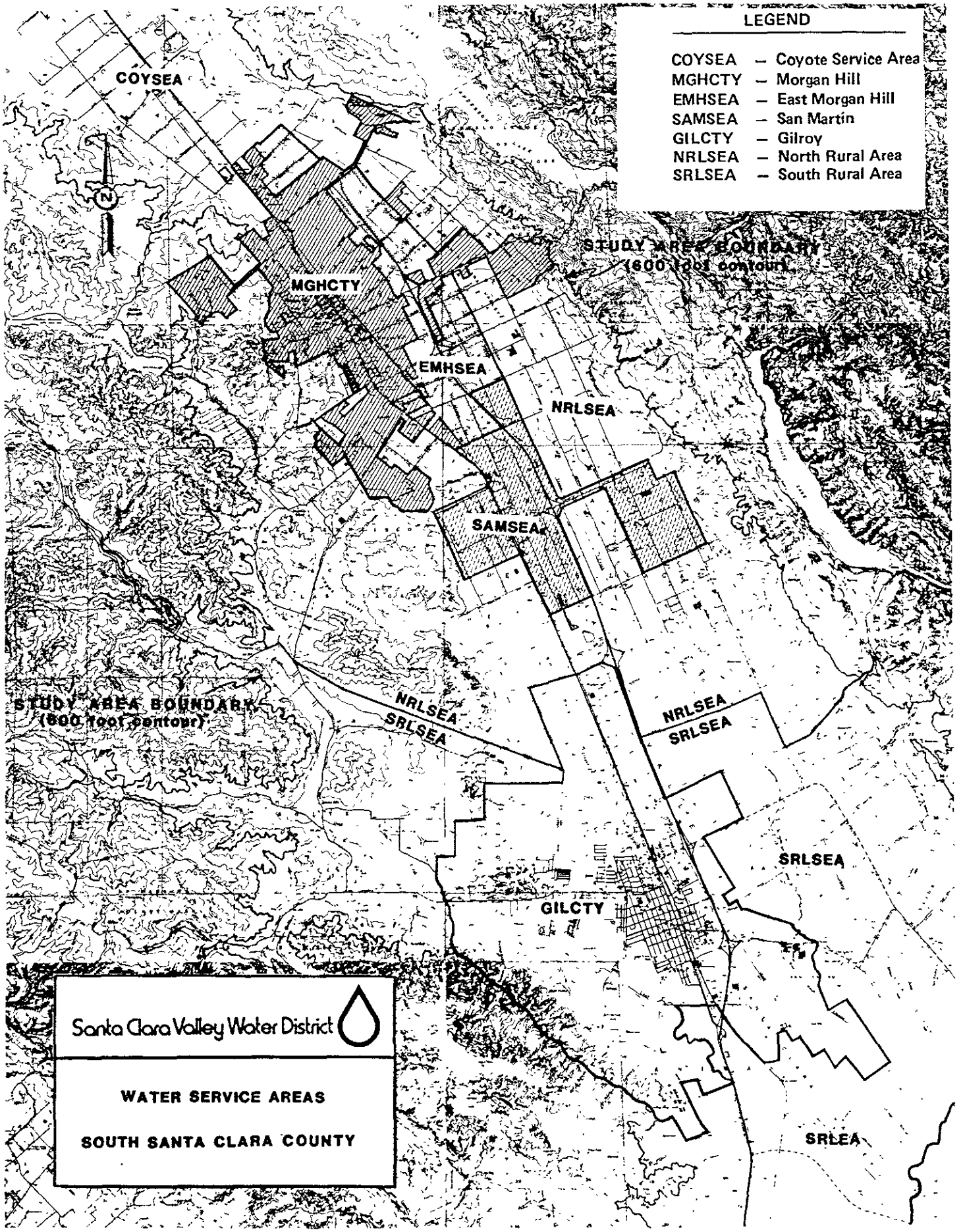
- Coyote Service Area
- City of Gilroy
- City of Morgan Hill
- East Morgan Hill
- San Martin
- North Rural Water Service Area
- South Rural Water Service Area

Figure II-3 shows the boundaries of these water service areas. These areas were designated by the District to better evaluate the areal water needs of the South County and do not necessarily represent present political or municipal subdivisions. However, the boundaries of the Morgan Hill and Gilroy Service Areas are intended to approximate existing or future city limits. The boundaries of the Coyote Service Area coincide with the boundaries of the Coyote Groundwater Subbasin.

Municipal/Industrial Water Needs

The District evaluated alternatives that could deliver water both through the groundwater and through surface delivery systems (i.e., pipelines). Surface delivery systems are feasible only where urban development has occurred at high enough densities that large amounts of water can be served in relatively small areas. The District assumed that to justify a surface delivery system, residential housing densities should be a minimum of two dwelling units per acre. Currently, only the urban development densities in the Cities of Morgan Hill and Gilroy exceed this limit.

FIGURE II-3


LEGEND
COYSEA – Coyote Service Area
MGHCTY – Morgan Hill
EMHSEA – East Morgan Hill
SAMSEA – San Martin
GILCTY – Gilroy
NRLSEA – North Rural Area
SRLSEA – South Rural Area
COYSEA
N
MGHCTY
STUDY AREA BOUNDARY
(600 foot contour)
EMHSEA
NRLSEA
SAMSEA
NRLSEA
SRLSEA
STUDY AREA BOUNDARY
(600 foot contour)
NRLSEA
SRLSEA
SRLSEA
GILCTY
SRLEA
Santa Clara Valley Water District
WATER SERVICE AREAS
SOUTH SANTA CLARA COUNTY

The City of Gilroy is located on U. S. Highway 101 about 40 miles southeast of San Jose. The 1984 population of Gilroy was about 25,550 people. It has a municipal water department which obtains all of its water from wells tapping the confined aquifers below the City. The water department has six wells and is proposing the addition of two more. The wells vary in depth from 300 to 700 feet; the system has a distribution pressure of 75 psi. In the year 2020, the projected water needs of the City of Gilroy are expected to be about 19,100 acre-feet per year, or 15 percent of the water needs in the South County area.

The City of Morgan Hill is located on Monterey Highway about 25 miles southeast of the City of San Jose. The 1984 population of Morgan Hill was about 19,050. The City's water department obtains all of its water from wells tapping the unconfined aquifer located below the City. The water department has 11 wells at depths between 400 and 500 feet and serves ten different pressure zones. It is estimated that, in the year 2020, the water needs of Morgan Hill will be about 16,200 acre-feet per year.

In addition to the service areas of the Cities of Gilroy and Morgan Hill, the East Morgan Hill and San Martin Service Areas are projected to reach a density high enough to support economical surface delivery of potable water. The projected industrial and residential growth in the Coyote Water Service Area may also reach a density high enough to enable it to be served economically by a surface delivery system.

It is envisioned that the rest of the South County area, the North Rural and South Rural Water Service Areas, will either remain in agriculture or be developed with residential units of a density too low to be served economically with a surface delivery system. It is believed that water needs in these areas should continue to be met by the use of wells.

The projected municipal/industrial water needs of these water service areas are presented in Table II-2.

TABLE II-2

PROJECTED ANNUAL AVERAGE WATER NEEDS IN SOUTH SANTA CLARA COUNTY[1/]

Year	Type of Use	Water Service Area								
		Coyote Subbasin	Morgan Hill	East Morgan Hill	San Martin	North Rural	Gilroy	South Rural	Llagas Subbasin	Total
1985	M&I	1,300	5,300	1,000	1,300	3,600	7,000	3,500	21,700	23,000
	Ag	9,800	1,800	1,600	2,300	13,500	9,900	32,700	61,800	71,600
	Total	11,100	7,100	2,600	3,600	17,100	16,900	36,200	83,500	94,600
1990	M&I	3,500	6,500	1,800	1,800	4,300	8,700	4,100	27,200	30,700
	Ag	9,700	1,400	1,300	2,200	13,200	9,200	32,300	59,600	69,300
	Total	13,200	7,900	3,100	4,000	17,500	17,900	36,400	86,800	100,000
2000	M&I	5,100	9,800	3,300	3,800	5,300	12,200	4,300	38,700	43,800
	Ag	8,800	900	700	1,800	12,200	7,800	31,700	55,100	63,900
	Total	13,900	10,700	4,000	5,600	17,500	20,000	36,000	93,800	107,700
2010	M&I	6,700	13,000	4,800	6,900	6,900	15,700	4,600	51,900	58,600
	Ag	7,900	300	100	1,300	10,500	6,300	31,400	49,900	57,800
	Total	14,600	13,300	4,900	8,200	17,400	22,000	36,000	101,800	116,400
2020	M&I	8,200	16,200	6,400	10,000	8,600	19,100	4,900	65,200	73,400
	Ag	7,000	0	0	800	8,700	4,900	31,100	45,500	52,500
	Total	15,200	16,200	6,400	10,800	17,300	24,000	36,000	110,700	125,900

[1/] Contained in South Santa Clara County Water Supply Plan, May 1983, by Santa Clara Valley Water District

Agricultural Water Needs

Future agricultural water use in the South County area will be affected by the continued conversion of agricultural land to urban uses and the continued conversion of orchard lands to row crops. The result of these trends is an estimated 27 percent decrease in agricultural water use in the South County area, from 71,600 acre-feet per year to 52,500 acre-feet per year. All of the water used for agriculture is assumed to be pumped from the groundwater.

Projected agricultural water use in each water service area is shown in Table II-2.

CHAPTER III

CURRENT WATER CONSERVATION MEASURES

This is to provide background information and an overview of the basis for the District's current water conservation programs. The specific urban water conservation programs implemented by the District are discussed extensively in Chapter IV of this report and in the DWR reference report.

The District's water conservation planning efforts increased dramatically in 1975, before the 1976-77 drought, when the District's Board of Directors authorized a consultant to conduct a study of available water-saving methods and their effectiveness. The recommendations from that study provided a basis for the District's overall water-saving efforts, and proved particularly helpful in expediting water-saving programs during the drought.

In July of 1978, the U. S. Bureau of Reclamation requested that the District: 1) evaluate its present level of water use to determine where water might be conserved, and 2) report steps it had taken and intended to take to promote the conservation of water from and through the future San Felipe Division federal facilities.

In response to that request, the District prepared the report "Water Conservation and Water Savings Program Relating to the Use of San Felipe Project Water in Santa Clara County", dated October 1978. The report was revised in November 1979 and printed as a brochure. The brochure was included as part of the District's water conservation literature and distributed to the public and to other agencies. A copy of the text of the 1979 report is appended (Appendix B) to this report.

The 1979 report outlines the District's overall water resources management program, which includes water conservation and water savings as vital elements, and cites the effectiveness of the program during the 1976-77 drought period. The report concludes that by integrating the San Felipe water supply into its existing sound water management program, the District will have an even greater level of protection against adverse impacts of future droughts.

The District has established the goal of maintaining permanently a water-savings of at least ten percent on the basis of pre-drought levels of use in order to ensure a balanced water supply for the future. This concept has been incorporated into the District's estimate of future water needs. The District supports this goal by continuing to provide educational programs and leadership in water conservation activities. These efforts are discussed in detail in Chapter IV of this report and in the DWR reference report.

The District has a strong water conservation program and is continuing to work with its retail water agencies and DWR to improve its program.

CHAPTER IV

ALTERNATIVE CONSERVATION MEASURES AND PROPOSED IMPLEMENTATION SCHEDULE

The District and its retail water agencies have implemented many water conservation programs which complement and enhance regional water management programs. The District coordinates its programs with those of the retail water agencies to assure maximum effectiveness and to avoid duplication of effort. These existing conservation programs, along with recommendations on alternative means to improve them, are presented in the DWR reference report. The following Table IV-1, Urban Water Conservation Measures, is a summary from the DWR reference report which has been revised and updated to reflect the current situation. The District requested all retail agencies preparing plans under the Act to provide updated information for inclusion in Table IV-1.

In addition to the retail agencies listed in Table IV-1, the City of San Jose Office of Environmental Management has an active water conservation program. Their present program includes a 1985 Business Water Conservation Program, and a 1985 Residential Flow Reduction Public Education Program. Comprehensive information regarding their overall water conservation program will be included in the City of San Jose's Urban Water Management Plan.

The District's present conservation programs, alternative programs, and future proposals will be considered in an ongoing review process. Implementation of selected alternative conservation measures may require the approval of the District's Board of Directors.

The following contains a description of existing and future conservation programs or efforts which may be implemented. The estimated costs, staffing requirements, and other significant impacts will be considered in evaluating and selecting alternatives for implementation. Guidelines for estimating costs and staffing requirements are contained

TABLE IV-1

URBAN WATER CONSERVATION MEASURES

X = Recommend Implementation
+ = Recommend Increased Effort
o = Evaluate/Revise
0 = Currently Implemented
* = In Process of Implementing

	WATER AGENCIES										
	Santa Clara Valley WD	Cupertino	Great Oaks	Santa Clara	Milpitas	Purissima Hills	Mountain View	San Jose Water Co.	Cal Water Service	San Jose	Sunnyvale
I. Education and Public Information											
A. Local Water Conservation Advisory Committee	0	X	X		X	X	X	X	X	X	X
B. Conservation Literature											
1. General Water Conservation Brochure	0	X	+	0	X	+	X	0	0	0	X
2. Landscape Brochure with Plant List	0	X	X	X	X	+	X	X	X	0	0
3. Brochures for Specific Water Users	+	X	X	X	X	X	X	X	X	+	X
C. Previous Year's Use on Water Bills		X	0	0	X	X	X	0	0	*	X
D. Promotional Measures											
1. Public Relations	0										
2. Public Speaking Presentations	0	X	0	+	X	0	X	0	0	X	X
3. Demonstration Low Water-Using Landscapes	*	X	*		X	X	X	X	+	+	0
4. Promotional Campaign with Nurseries	*	X	*		X	X	X	X	X	X	X
5. Awards for Conservation Developments	X	X	X		X	X	X	X	X	X	X
E. Work with Large Water Users	0	+	*	0	0	0	0	o	+	0	0
F. In-School Education	0	+	+		+	+	+	+	+	+	+
G. Information on Federal and State Laws and Programs	+										
II. Water Management Programs											
A. Water Loss Reduction Techniques											
1. System-wide Water Audit	o	o	0	0	o	o	+	o	o	o	+
2. Leak Detection Program											
a. For Agency's System	0	+	+	0	+	+	+	0	o	o	o
b. For Customer's Side		+	+	0	+	+	+	0		+	+
3. Meter Calibration and Replacement Program	0	o	o	0	o	o	o	o	o	+	0
4. Corrosion Control	0	o	o	0	o	o	o	o	o	o	0
5. Valve Exercising Program	0	o	o	0	+	0	o	0	0	0	0
B. Metering Existing Customers		0	0	0	0	0	0	0	0	0	0
C. Device Distribution	0	+	*	0	+	0	+	0	0	0	+
D. Meter Loan Program, Large Water Users		X	0	0	X		0	X	X	X	X
E. Pricing		o	o		o	o	o	o	o	o	0
III. Regulations											
A. Environmental Impact Reports/Statements	X	X		0	X	X	+	X	X	X	+
B. Water Waste Reduction Program		X	+	0	+	+	+	+	X	+	+
C. Water Conservation Ordinances											
1. Requirements for Large Water Users		X	X	0	o	X	X	X	X	X	+
2. Self-Closing Faucets		X	X		X	X	X	X	X	X	X
3. Low Water-Using Landscapes		+	X		X	X	+	X	X	X	0
4. Metering New Customers		0	0	0	0	0	0	0	0	0	0
IV. Water Emergency Plan	0	+	X	0	X	+	+	X	X	X	+

in the DWR reference report. The alternatives are presented in four major categories: education and public information, water management programs, regulations, and water emergency plans.

Education and Public Information

The District's alternative education and public information effort has been designed to promote water conservation awareness and to assist the retail water agencies with their programs. Alternatives to be considered include evaluation/revision or increased effort on existing programs, or future implementation of additional programs. Recommended alternatives are discussed below.

Local Water Conservation Advisory Committee

When the District began its water conservation program in 1975, one of its first actions was to have an advisory committee review the measures recommended in its report, Water Savings. Since that time, the District has reviewed and evaluated its water conservation activities periodically with various advisory groups. These groups include the Santa Clara Valley Water Commission, Agricultural Water Advisory Committee, Retail Water Agencies Committee, and the Treated Water Contractors.

The District will continue to coordinate its water conservation activities with the existing groups, and as appropriate will form additional committees to offer advice on developing and implementing the programs discussed in this report, or others as they are developed. Instead of forming one large water conservation committee to cover the whole program, the District forms different advisory groups to address various needs as they develop. The makeup of each committee would depend upon its specific goals, and include public and private sector groups as appropriate.

Conservation Literature

The District will continue to publish, distribute and update water conservation literature to encourage a reduction in the growth of urban water use. Additional brochures will be published as needed. Currently available literature includes:

* "25 Things You Can Do to Prevent Water Waste"
* "Ways to Conserve Water"
* "The Story of Water Supply"
* "The Water Goes Round and Round"
* "How to Fix Leaky Faucets"
* "Reduced Flush Devices"
* "Save Water With a Shower"
* "Drip Irrigation"
* "Drought Resistant Plants"
* "Frugality With Garden Water"
* "Drip....Its Time Has Come"
* "Browning of the Greensward"
* "For Summer-Dry California: Water Savings Planting Ideas"

Promotional Efforts

Public relations activities are designed to reach large numbers of people with various conservation messages. Programs include:

* $24,000 spent in the past three years as a participant in the San Francisco Bay Area Water Resources Council annual water conservation campaign. This effort has, through advertising in Bay Area newspapers, radio and TV, reached hundreds of thousands of Santa Clara County residents with information on why and how to conserve water. This campaign is expected to continue.

* $32,500 spent in 1981 as a participant (the District managed the public education campaign) with the State Department of Water Resources and City of San Jose in the distribution of about 475,000 conservation kits to virtually every home and business in the County. This resulted in a large percentage of installation and defined water savings which will continue to accrue as long as the devices function. A report entitled, "Kit Distribution Project in Santa Clara County" which summarizes the background,

objectives, elements, costs, and results of the distribution project is appended (Appendix C) to this report.

* Literature distribution at the Santa Clara County Fair and other large gatherings such as Scout O' Rama and Tapestry 'N Talent continues on a large scale. An estimated 10,000 pieces of literature are distributed annually. This program will continue.

* Conservation kits are distributed at District offices and will continue to be distributed free of charge in the future.

* Tours of District facilities include significant information about why and how to conserve.

* About $12,000 is being spent this year to create a permanent Water Discovery Trail in Vasona Park, the most popular such park in the County with annual visitor-days in excess of one million. The "trail" will be a series of art panels that describe our water system and the need to conserve.

* In 1984 the District placed billboards throughout the County to describe the need for conservation. One large board, on one of the busiest streets in the County, is maintained permanently for water conservation messages.

Numerous public speaking presentations are made to area service clubs, corporate management and employee groups, and other groups to describe our water system and the need for conservation. This process will continue.

The District has contributed $12,000 to the County of Santa Clara, which is building a one-half acre drought resistant demonstration garden at the aforementioned heavily-used Vasona Park. The garden will be constructed in 1985 and the District will be responsible for developing literature and promotions to attract visitors.

Also in the area of using less water outdoors, the District contributed to a drought resistant grasses study by the University of California that will determine which grasses will grow in various climates in the State. This was in conjunction with other water districts in the State. Information gained in the study will contribute significantly to the

body of knowledge about drought resistant grasses, and will aid this District, other agencies, and the private sector in landscape planning.

Mass media messages regarding the need for and methods of conservation have been disseminated throughout the years through efforts by the District public information office, and this effort will continue.

In-School Education

The District has distributed an average of about 25,000 student workbooks and teacher guides on request each year since 1977 at an average annual cost of about $10,000. This program will continue and is conducted in cooperation with the Santa Clara County Office of Education.

A new film, "Voices of Water", was completed in 1985. This film emphasizes the water systems of Santa Clara County and why water should be conserved. The film is used primaily by upper elementary education students; the costs for production and distribution have exceeded $34,000.

The District has retained a consultant to prepare new classroom education materials that will replace those currently used by upper elementary students (Captain Hydro). The material, to be produced at a cost of about $40,000, will place significant emphasis on Santa Clara County water systems and the need to conserve.

A film, "Water Follies: A Soak Opera, has been purchased by the District; 12 copies of it have been used for eight years by local schools, and an average of 20,000 students see it annually.

The District has contributed $1,000 to the American Water Works Association to develop computer software for teaching water science, management and conservation in high schools. This will include an interactive tutorial and water management simulation. A written teacher's guide and student workbook will also be included, and the District will sponsor reproduction and distribution of the printed materials and software disks in Santa Clara County high schools.

Water Management Programs

The District is effectively implementing management programs and techniques, applicable to the District as a wholesaler of water, cited in the DWR reference report. The following information concerns revisions made in Table IV-1 related to the DWR report.

Water Loss Reduction Techniques

* System-wide water audit - The District currently does a daily audit of flows in all of its pipelines; all groundwater pumping is metered in some way; and evaporation losses from all facilities are calculated monthly.

* Leak detection program - The District has no unaccounted water losses within the accuracy of its meters. Small leaks show up as seepage before they would be detectable any other way. The District makes ground level and aerial surveys for seepage leaks. Considering that all water is accounted for, the installation of an elaborate leak detection program is unnecessary and obviously would not be cost effective.

* Meter calibration and replacement program - The District has a meter test shop and tests meters regularly based on volume measured or maximum time since the last test. When necessary, meters are repaired and retested. The program follows standard testing procedures.

* Corrosion control - All District facilities potentially subject to corrosive action either have some form of cathodic protection or are monitored routinely to ensure that a serious problem does not develop.

The District has become involved in developing management programs to assist in cleaning up groundwater contamination resulting from hazardous materials leaking from underground storage tanks. The following discusses this vital issue.

Management of Groundwater Contamination and Possible Reclamation

Serious groundwater contamination problems have been detected in Santa Clara County as a result of hazardous materials leaking from underground storage tanks. The District is working with Federal, State, and local regulating agencies to develop viable means to identify, monitor, and clean up contaminants in the County's groundwater supplies. A concerted effort is under way by the South Bay Groundwater Contamination Task Force. This group includes top management representatives from the County of Santa Clara; the City Managers Association; the District; the California Regional Water Quality Control Board (RWQCB); the Department of Health Services; and the Federal Environmental Protection Agency.

Two of the major problem areas identified to date are the IBM site on Cottle Road and the Fairchild Camera and Instrument Corporation site, both located in the South San Jose area.

The amounts of water extracted and costs incurred for cleanup purposes are substantial. IBM indicated that it had pumped about 8,900 acre-feet, (4,900 and 4,000 acre-feet respectively, for on-site and off-site extractions) through 1984.

In order to accelerate the chemical removal process so that corrective groundwater pumping could be reduced and eventually ceased, Fairchild developed a recharge program in conjunction with the RWQCB. Under the recharge program, Fairchild received approval from the District to add a small portion of the pumped contaminated water to the water-bearing zone nearest the surface at the Fairchild facility referred to as the "A" aquifer. The "A" aquifer is not used for water production and is dry most of the year. The contaminated water is treated and recharged through five injection wells and subsequently pumped out through nine wells located down gradient. In other words, the water is continually being recycled through the "A" aquifer. The recharge program not only assists in the cleanup process, but also conserves a portion of the recycled water which otherwise would have been discharged into the storm sewer system and lost to San Francisco Bay.

The primary objective of the cleanup process is to control the contamination and protect the groundwater aquifers for domestic and other beneficial uses. The cleanup involves extensive monitoring, and pumping and disposal of contaminated water from the aquifers involved. The District recognizes the potential value of reclaiming the contaminated water which is pumped in the cleanup process, and is studying the feasibility of alternative means to reclaim and conserve the water.

Regulations

The District's basic policy is to encourage the efficient use of water in its service area through voluntary water conservation programs conducted in cooperation with its retail water agencies. However, the District worked with city governments and the County during the 1976-77 drought to amend local building codes to require the installation of water saving shower and faucet devices in future construction.

Environmental Impact Reports/Statements

The District routinely reviews Draft Environmental Impact Reports (EIR's) sent to it by planning departments of local cities and the County regarding projects that will greatly increase the demand for water. The District also reviews Draft Environmental Impact Statements (EIS's) involving proposed federal projects. The District will request that local planners make water conservation recommendations when reviewing and writing EIR's and also when reviewing EIS's if they have occasion to review federal projects.

Water Waste Reduction Program

This program relates to the retail water agencies and will be discussed in their respective plans.

Water Conservation Ordinances

Local city governments have the primary responsibility and authority for establishing water conservation ordinances within the District's service area. Several cities are retail water agencies themselves. Private retail water agencies work with

their respective city councils for the areas in which they serve to achieve the adoption of water conservation ordinances. The District has worked with cities in the past, particularly during the drought, and will continue in the future to assist in efforts to have appropriate water conservation ordinances adopted.

Water Emergency Plans

The District has a voluntary water emergency plan which was used successfully during the 1976-77 drought, the driest known two-year period in the area's 150-year recorded history. In February 1977, the District's water supply for the remaining 11 months of the year was projected to be 25 percent less than its water needs. Implementing the emergency plan resulted in a total of 24 percent less water being used in 1977 than used in 1976. A summary of the elements, costs, and results of the emergency plan is appended (Appendix D) to this report. The plan is in such a form that it can be used again if a drought or other emergency water shortage situation threatens.

The District recognizes that mandatory conservation measures might be required in the future during times of severe, prolonged water shortage. The District plans to approach an emergency situation by starting implementation of its voluntary program, while concurrently working with its retail water agencies and other advisory groups to define the extent of the emergency and to explore the options available to mitigate the situation. The District did have a contingency water savings program during the drought in case the required reductions were not achieved voluntarily. The proposed program included a mandatory water savings ordinance for implementation by the Cities and the County, should it have become necessary. This same type of program could be included in future emergency plans if required.

The District also recognizes the need to have emergency water supplies available in case its imported water supply facilities or its in-county distribution facilities were damaged or rendered inoperable by a large earthquake or other natural or man-caused disaster. The District has encouraged its retail water agencies, where practicable and

feasible, to provide at least two different sources of supply, preferably one surface water and one groundwater source. This concept was used in developing the District's 1975 Master Plan for the expansion of its in-county water distribution system and in planning specific facilities to meet future needs.

In addition, the District worked in cooperation with the U. S. Geological Survey which prepared a report entitled, "Sources of Emergency Water Supplies in Santa Clara County, California" dated August 1977. The report was also known as "Water-Resources Investigations 77-51, Open-File Report". The report identified 128 wells in Santa Clara County as potential water supply sources in emergency situations. This information would be available to the District for preparing water emergency plans.

CHAPTER V

FREQUENCY AND MAGNITUDE OF SUPPLY DEFICIENCIES, AND ABILITY TO MEET SHORT-TERM DEFICIENCIES

The District's service area now has four major sources of water supply: local groundwater, local surface reservoirs, imported water from the South Bay Aqueduct of the SWP, and imported water from the Hetch Hetchy Aqueduct. Additional imported water from the federal San Felipe Division of the Central Valley Project (CVP) is scheduled to be available in mid-1987. The water supply and demand situation for the North County area is discussed in detail in the DWR reference report and the South County area is discussed in Chapter II of this report.

The District has achieved its variety of water supply sources over the years by identifying needs, and planning and implementing projects and programs to meet these needs. The District has attempted to manage effectively and optimize the use of its total water supply. This affords considerable flexibility in compensating for supply deficiencies.

The reliability of the different sources of water supply varies because of physical, economic, political, or other factors which may be beyond the District's control. The District has attempted to reduce the adverse effects of deficiencies as much as practicable, and has been successful in the past in doing so. An example of this success was the achievement of voluntary water conservation goals during the 1976-1977 drought, the worst drought period in the area's 150 years of recorded history.

In the past, the District has recognized the need for additional water supplies for its rapidly increasing population (increasing from 290,000 in 1950 to about 642,000 in 1960, and over the million mark (1,066,000) by 1970), and has been successful in securing firm long-term water supply contracts. The District signed its contract with DWR in 1961 for an eventual supply of 100,000 acre-feet from the SWP. The District concurrently pursued the authorization of the San Felipe Division. The project was

subsequently authorized by Congress in 1967. A water supply contract with the U. S. Bureau of Reclamation was signed in 1977. Project construction was delayed by a court action filed upon environmental grounds. The action was unsuccessful and construction started in 1978. The project is scheduled for completion in mid-1987.

In spite of the District's planning, water management, and conservation efforts, its water needs equaled and began to exceed its long-term average water supply from existing facilities in the early 1980's. The main reason for this temporary supply shortage was that the San Felipe construction schedule had been delayed as previously discussed. Once the San Felipe Division is in operation, the District estimates that its total water supply will be able to meet its average long-term water needs until sometime well beyond the year 2000.

The critical period, when supply shortages could be most damaging, is the interim time from the early 1980's until San Felipe is on line in 1987. Fortunately, the 1980, 1982, and 1983 water years were extremely wet years and the District was able to replenish its groundwater subbasins and surface reservoirs. The 1984 and 1985 water years, however, have been below average and the District is having to draw more heavily on its groundwater subbasins. This is the normal procedure for the conjunctive use type of operation employed by the District, but the current two-year dry period creates a greater potential risk of shortages in 1986 and in 1987. The District recognizes the risk and is prepared to increase its water conservation efforts in the event that 1986 is a dry year.

The outlook for potential future water supply shortages from the SWP is greater than that of the past. The future delivery of the full contractual amount (100,000 acre-feet annually) of water to the District is dependent upon the completion of sufficient additional facilities to produce a total dependable water supply of 4.2 million acre-feet per year. The existing SWP facilities produce only about 2.3 million acre-feet per year, although the State contractors' need is already greater than 2.3 million acre-feet during

dry years. The SWP must be completed, and the additional facilities must be built in a timely manner to avoid serious water shortages to the District and to the other 29 State water contractors. The District is currently receiving 88,000 acre-feet annually of its 100,000 acre-feet maximum entitlement, but if DWR were unable to build additional facilities the SWP supply could be reallocated and the District's future entitlement could be reduced to about 48,000 acre-feet annually. However, the SWP provides a supplemental water supply to more than two-thirds of the people of the State, and if water shortages become acute, it is unlikely that the State would not build additional facilities to meet the needs of such a large portion of its population.

The availability of San Felipe Division water supplies in 1987 will reduce the risk of future deficiencies and alleviate the impacts of short-term deficiencies in the event that the SWP facilities are delayed. The San Felipe Division water service contract sets forth minimum quantities of water that the District must pay for, but allows the delivery of larger quantities provided that water is available in the CVP system. The District has been constructing additional in-county distribution facilities to convey San Felipe water. These facilities are scheduled for completion concurrently with completion of the San Felipe Division in 1987. This expanded system will significantly increase the District's ability to adjust to fluctuations in water supplies from the State or Federal systems.

CHAPTER VI

WASTEWATER RECLAMATION

The District has participated extensively with local public agencies and appropriate State and federal agencies in studies to determine the viability of using reclaimed water as a replacement for potable water to reduce the need for "new" water supplies for Santa Clara County. Reclaimed water is considered to be water which, as a result of treatment of domestic wastewater, is suitable for a direct beneficial use or a controlled use that otherwise would not occur.

The District has examined wastewater reclamation from a dual perspective, that is, from the viewpoint of the potential impact which the availability of reclaimed water would have on the need for imported federal water, and also the potential for large-scale use of reclaimed water in the District in the future.

The District and DWR reached an understanding in 1975 whereby the District indicated that it was willing to allow its maximum annual contracted entitlements of San Felipe Division water deliveries (152,500 acre-feet) and South Bay Aqueduct water deliveries (100,000 acre-feet) to be limited to 137,500 and 95,000 acre-feet, respectively unless a determination was made before January 1, 1990, that the District's supplemental water needs above those reduced contract amounts could not feasibly be met by reclaimed wastewater.

The District subsequently participated in a series of water reclamation studies and projects which were made cooperatively by the District and various State, federal and local agencies. The work included: a two-phase study (I-A and I-B) of water reuse in Santa Clara County conducted in cooperation with the Department of Water Resources, the construction and operation of the Palo Alto Reclamation Facility, the construction and operation of the Gilroy Reclamation Facility, and the Milpitas-North San Jose Water Reclamation study. In addition, the District participated in the San Francisco Bay Area Regional Water Reuse Study with a number of other agencies under a joint exercise of powers agreement.

These studies and projects indicated that the feasible uses of reclaimed water in Santa Clara County are much more limited than previously thought. The following summarizes the water reclamation studies and projects.

Water Reclamation Studies and Projects

Phase I-A (December 1980)

The Phase I-A study investigated the possibility of transporting reclaimed water from the San Jose-Santa Clara Pollution Control Plant and the Gilroy Reclamation Facility for agricultural and open-space irrigation. The study concluded that it was not financially feasible to use reclaimed wastewater for irrigation without obtaining large subsidies. DWR notified the District by letter of January 6, 1981, that the District had "...lived up to our agreement made in 1975, "...to cooperate with the Department of Water Resources to secure a major wastewater reclamation project for unrestricted agricultural use in Santa Clara County"."

Some of the reasons that the surface delivery of reclaimed water proved to be infeasible include the following:

1. The difficulty in obtaining long-term commitments from farmers to invest in a water reclamation program for the purpose of irrigation. This is because of strong economic pressure towards urbanization of agricultural lands. Implementation of a water reclamation project to deliver water for agricultural purposes in South County would require contracts and assurances that urbanization of agricultural lands would not occur.

2. The need to dilute the adverse quality of reclaimed water, especially its high sodium content, with San Felipe water or to require additional treatment. Such requirement diminishes the already limited market and economic competitiveness of reclaimed water for agricultural irrigation.

3. The high cost of delivering reclaimed water (more than $530 per acre-foot in 1980 dollars, without subsidy).

Phase I-B (June 1983)

Phase I-B analyzed the potential reuse of wastewater from the San Jose-Santa Clara Water Pollution Control Plant for groundwater injection in the Santa Clara Valley Subbasin. The most promising use of such reclaimed water was suggested to be its injection into the main drinking water aquifer of the Santa Clara Valley Subbasin where it would be available to all types of water use. The cost of this drinking water was estimated at $360 to $430 per acre-foot. However, even if reclaimed water could be made safe and technically feasible for injection and eventual extraction as drinking water, there are other important aspects that need to be considered including:

1. The absence of federal or State water quality standards for using reclaimed water as a source of drinking water.

2. The possibility of contaminating the aquifer.

3. The high possibility of the public rejecting drinking water mixed with reclaimed water.

To overcome the above difficulties, pilot studies, consumer education programs and market analysis would have to be conducted. At present, further studies have not been implemented.

Palo Alto Reclamation Facility (PARF)

Because of groundwater overdrafting, seawater intrusion has become extensive in the shallow aquifer in the Palo Alto area. To combat seawater encroachment, the District, in cooperation with the Cities of Palo Alto, Los Altos and Mountain View, embarked upon a program of water reclamation and groundwater recharge via injection wells in the San Francisco Bayfront Area. The source of reclaimed water was the Palo Alto Reclamation Facility (PARF), an advanced water treatment plant with a capacity of four million gallons per day (MGD). The PARF uses effluent from the adjacent 35 MGD Palo Alto Regional Water Quality Control Plant. The purpose of the project was to inject reclaimed water from PARF into shallow aquifers. This would

establish a freshwater barrier to prevent further saltwater intrusion into the shallow aquifers. The recharged water subsequently would be extracted for irrigation use without allowing it to move far enough inland to commingle with water used for potable supply. In addition, reclaimed water from PARF was planned for landscape irrigation. Unfortunately, neither plan succeeded. The complex makeup of the aquifer precluded the success of the simple injection-extraction concept underlying the project. Negative public attitude and an ample supply of freshwater accounted for the failure of using reclaimed water for landscape irrigation.

Extensive studies made by the U. S. Geological Survey, in conjunction with the District, concluded that the injection/extraction operation at PARF is not the most effective way to provide a saltwater intrusion barrier as originally contemplated.

The present situation is that the District has requested permission from EPA to disband the PARF wellfields, and has budgeted funds in the 1985-86 fiscal year to do so. In addition, the reclamation facilities were turned over to the City of Palo Alto as of July 1, 1985.

Gilroy Reclamation Facility

The District cosponsored construction of the Gilroy Reclamation Facility with the City of Gilroy and the Gavilan Water Conservation District. The facility was developed in response to the need for new water supplies in the Gilroy area following the 1976-77 drought and the resultant severe overdraft of the limited groundwater table. The capital cost of the project, about $1,900,000, was financed by an interest-free loan of $1,250,000 from the Bureau of Reclamation and a local contribution of $650,000 shared by the cosponsors. The cost of operation is paid for by the cosponsors.

The facility, which has the capacity to produce about 1,500 acre-feet of reclaimed water annually, provides special treatment to domestic sewage from the Cities of Gilroy and Morgan Hill. The intent was to use the reclaimed water to irrigate non-food crops and landscaping. Users originally contracted for about 700 acre-feet per year, but actual

use has been much less. During the five-year period from fiscal year 1978-79 through 1982-83, an average of about 240 acre-feet of reclaimed water per year was delivered at an average cost of about $490 per acre-foot for operations and maintenance costs alone. The current price for water from the system is $20 per acre-foot for agricultural use and $80 per acre-foot for uses other than agriculture.

The reduced usage of reclaimed water from the project can be attributed to a number of factors including a post-drought increase in the quantity of local supplies, poor marketing strategy, unfavorable public attitudes, and the promulgation of more stringent wastewater reclamation criteria (Title 22, Division 4, California Administrative Code).

Additional markets for reclaimed water are needed to improve the cost/price relationship of the facility. The market may be expanded if the quality can be improved to meet health requirements of unrestricted irrigation use and an aggressive marketing strategy is embarked.

Milpitas-North San Jose Water Reclamation Study

In 1976, the District filed a request for grant funding under the federal Clean Water Grant Program for a wastewater reclamation project to serve the western portions of the City of Milpitas and the areas of North San Jose and North Santa Clara. The study was to consider the use of the Milpitas Treatment Plant and the San Jose-Santa Clara Water Pollution Control Plant (WPCP). In 1977, the District retained Brown and Caldwell, Consulting Engineers, to investigate the demand for and the feasibility of supplying reclaimed water from the WPCP to potential users in Northeast Santa Clara County. The District also retained the firm of EDAW, Inc., to prepare the Environmental Impact Report (EIR). The Brown and Caldwell project report was completed in July 1978 and accepted by the District's Board of Directors on October 3, 1978. The 1978 studies showed that the cost of reclaimed water was high, and that there was a limited demand for the service. Although the District accepted the Brown and Caldwell report, it did not adopt the plan recommended in the report.

During the course of the studies, the Cities of San Jose and Santa Clara indicated that they should be major partners in planning and implementing the project, because they were the sources of the reclaimed water and operated the retail water services in the area. The State Water Resources Control Board agreed and directed the District to negotiate with the Cities to resolve this issue. As a result of negotiations, the District agreed that it would retain responsibility for completing work on a Draft Facilities Plan and EIR, and then turn the responsibility for the project over to the Cities. This shift in responsibility was accomplished by all parties signing "Successor in Interest Agreements". The District's Board of Directors approved these agreements in August 1979.

In December of 1980, the Cities' consultant, Brown and Caldwell, completed an updated version of their earlier report with a somewhat scaled-down project. The report considered potential uses of reclaimed water for agriculture and landscape irrigation, and industrial reuse. The study assessed a reclamation potential demand of 2,780 acre-feet per year and presented three alternatives to satisfy the demand. The alternatives are:

1. Supply peak hour demand of 15.1 MGD from the WPCP with no equalization storage in the distribution system.

2. Supply maximum day demand of 7.5 MGD from the WPCP with equalization storage/pumping facilities in the distribution system.

3. Develop alternative source of raw water supply, i.e., no reclaimed water project.

The costs of water with Alternatives 1, 2, and 3 were estimated to be $350, $375, and $151 (in 1980) per acre-foot, respectively. The Consultant's report concluded that the use of reclaimed water in the Cities at that time was not an economically viable alternative to potable water on a price basis using incremental cost pricing. The report, however, recommended continued efforts towards the eventual necessity for a water reclamation project.

The City of San Jose has neither gone forward with Alternatives 1 or 2 above, nor developed a new alternative proposal.

The City of Santa Clara, in September 1985, completed a report on a proposed water reclamation project. The report is entitled, "City of Santa Clara, Water Reclamation Project, Facility Plan, and Feasibility Study Submitted for California Water Resources Water Reclamation Loan Program". The proposed project provides for pumping tertiary treated effluent from the WPCP through about 10,400 feet of 16-inch pipeline to supply a new municipal golf course. The golf course will be served by two connections from the City's potable water system as well as two reclaimed water delivery points (turnouts). The most probable operation would be to apply undiluted reclaimed water for four days and then apply potable water for one day. At this ratio of application, the golf course would require about 448 acre-feet of reclaimed water per year.

The City of Santa Clara has applied to the State Water Resources Control Board through its Water Reclamation Loan Program for a low-interest loan to finance the project. The loan will cover the estimated design, construction, and engineering services costs of $1,250,000. The City will contribute an additional $100,000 for facility planning and engineering inspection. The loan will extend for a period of 25 years with an interest rate of 50 percent of the average interest paid by the State on general obligation bonds for the preceding calendar year (4.7 percent for 1985).

The San Francisco Bay Area Water Reuse Study

The District, under a joint exercise of powers agreement with a number of other agencies, participated in a study to explore the potential large-scale reuse of San Francisco Bay Area wastewater. A wide range of alternative projects using this reclaimed water was examined. The most promising project involved delivery of reclaimed water to the western Delta for salinity control. This delivery would make up for Delta outflow requirements, estimated at 220,000 acre-feet per year, of the State

Water Project and the Central Valley Project (CVP). This meant that freshwater which otherwise would be used for salinity control could be used to meet contractual obligations of the SWP and the CVP. The Delta Salinity Control Project, however, was dependent upon construction of the Peripheral Canal. When the voters failed to approve Proposition 9 (Senate Bill 200) in the June 1982 election, construction of the Peripheral Canal was postponed indefinitely. Although alternatives to the Peripheral Canal have been considered, these alternatives would render the already marginally economic Delta Salinity Project less favorable.

Recommendations

The status of the above studies and reclamation facilities illustrate the various constraints and problems that have led to the limited use of reclaimed water in Santa Clara County rather than the extensive use which was once thought probable. The limited use can be attributed to unfavorable public attitude, unfavorable economic feasibility and potential health hazards. Despite these drawbacks, the potential use of reclaimed water warrants at least a limited level of planning and development towards large scale use, especially for the purposes of non-food crop and landscape irrigation.

Conclusions

In view of the extensive efforts and funds expended by the District on studies and projects to evaluate the viability of using reclaimed water in Santa Clara County, the District believes that it has reasonably satisfied the conditions of the 1975 understanding with DWR regarding possible reductions in state and federal water contract amounts. The District in 1975 indicated that it was willing to allow its maximum annual contracted entitlements of San Felipe Division water deliveries (152,500 acre-feet) and South Bay Aqueduct water deliveries (100,000 acre-feet) to be limited to 137,500 and 95,000 acre-feet, respectively unless a determination was made before January 1, 1990, that the District's supplemental water needs above those reduced contract amounts could not feasibly be met by reclaimed water.

The District believes that the results cited in this report regarding water reclamation studies and projects provide evidence to demonstrate that the subject supplemental water needs can not feasibly be met by reclaimed wastewater. The District will request DWR to make a determination in this regard.

CHAPTER VII

WATER EXCHANGES OR TRANSFERS

The DWR reference report discusses potential water transfers and exchanges among the District and other major water agencies in the Central and South San Francisco Bay region. There are continuing discussions among these agencies through the Bay Area Water Resources Council to explore means for responding to area water shortages.

The District has been discussing sporadically over the past several years with the San Francisco Water Department, the potential benefits of an intertie between the District's system and the Hetch Hetchy system, particularly in regard to emergency situatations. The District does not contract for Hetch Hetchy Water itself, but several of its retail water contractors also have water supply contracts with San Francisco for Hetch Hetchy water.

During this period (about 1980-1983) San Francisco's water supply contracts with its suburban customers in San Mateo, Santa Clara, and Alameda Counties were expiring. In the negotiations to renew the contracts, disputes arose regarding the allocation of costs of the Hetch Hetchy system, water rates, and other issues. These disputes developed into litigation, and San Francisco was reluctant to consider seriously issues, such as an intertie, water exchanges, or water transfers until the water supply contract issue had been resolved.

Recently, the possibility of negotiations between the District and San Francisco on the issues of an intertie, and water exchanges or transfers, has improved significantly for several reasons. San Francisco and the suburban water users have reached substantial agreement on the renewal of the water supply contracts. Also the District is in the process of extending its distribution system to serve the City of Milpitas. This extension will bring the two systems a few miles closer together physically. It is apparent that the water supply needs of the Hetch Hetchy customers in Santa Clara County can best be

met by cooperative efforts by the District and San Francisco. The District will continue efforts to initiate negotiations with San Francisco to this end.

CHAPTER VIII

MANAGEMENT OF WATER SYSTEM PRESSURES AND PEAK DEMANDS

The management of water system pressures and peak demands relates to two different elements of the design of the District's distribution facilities. System pressure is one of the major factors considered in determining the location of where to construct new facilities, while peaking is a primary consideration when determining the size of the facilities.

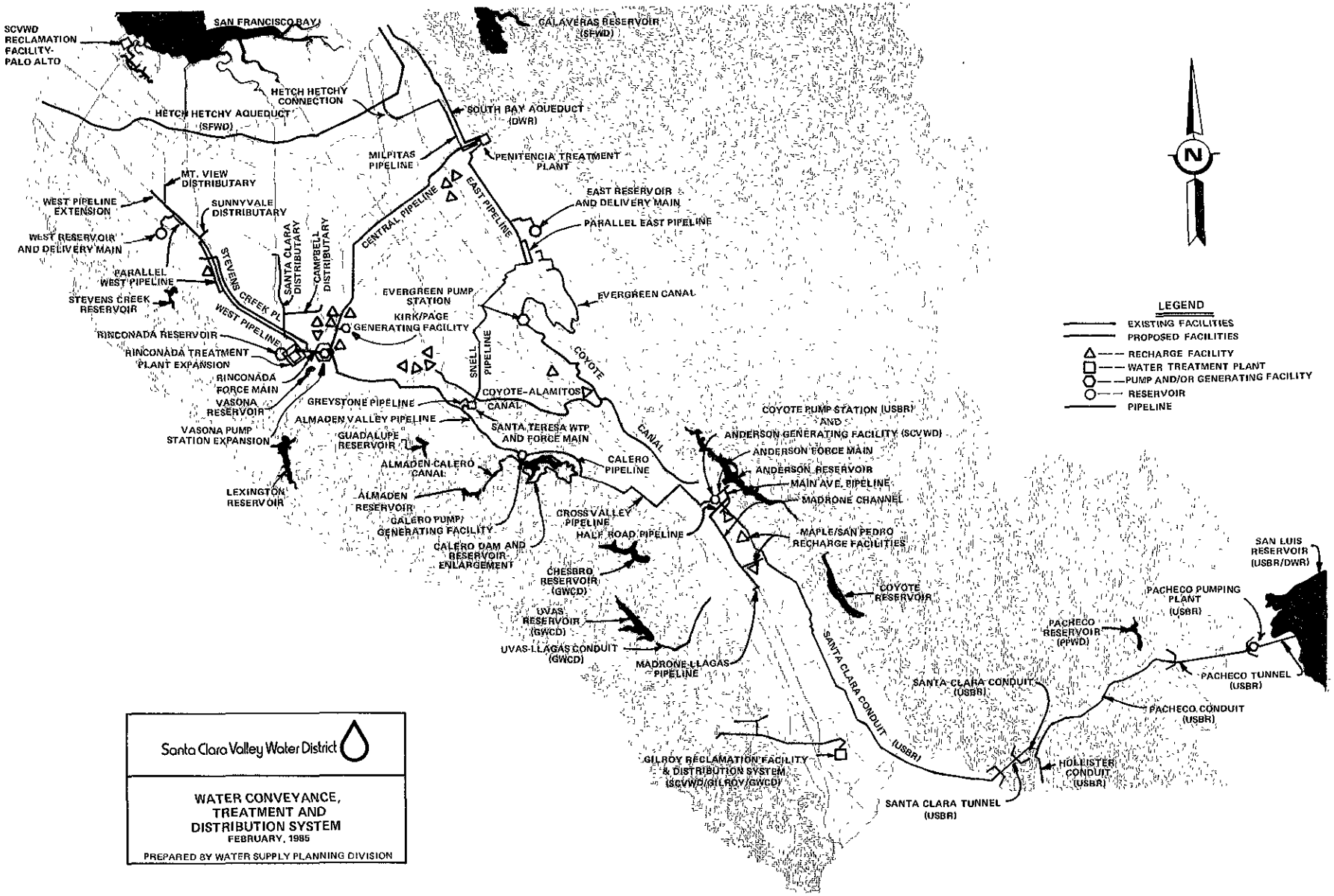
System Pressure

The District's two imported water supplies, the South Bay Aqueduct of the SWP, and the San Felipe Division of the CVP, each deliver water to the District at elevations high enough so that most of the District's service area can be furnished water by gravity or with minimal pumping. In the design of the distribution systems and treatment facilities, locations and alignments are selected so that the advantages of relatively high hydraulic elevations would be preserved.

The District, as a water wholesaler, provides water to its retail water agencies which in turn try to make effective use of any pressure advantages within their own individual distribution systems. Details regarding the management of specific retail agency's water system pressures can be found in their respective plans.

The District uses automatic protective devises to insure that design pressures are not exceeded in its pipelines. These are primarily hydraulically operated pressure relief valves.

The District is in the process of installing small hydroelectric generating plants at two locations. One site is near the base of Anderson Dam where the Santa Clara Conduit of the San Felipe Division comes into the Coyote Pumping Plant near Morgan Hill. The other site is in the vicinity of the Kirk and Page turnouts off the Central Pipeline. The location of these sites is indicated on Figure VIII-I, which shows the District's water



VIII-2

FIGURE VIII-1

conveyance, treatment and distribution system. The hydroelectric units will capture energy that otherwise would have been dissipated in pressure reduction devices.

The Kirk/Page unit, which is in the design stage, will help resolve another problem. Currently, several of the District's raw water turnouts off of high pressure distribution pipelines experience cavitation which results in frequent replacement of system line valves. The installation of the hydroelectric unit will eliminate existing cavitation problems at Kirk/Page and also create a source of revenue for the District.

The District has a comprehensive preventive maintenance program staffed by trained personnel who ensure that the system and safety devices are regularly maintained, tested, repaired, and kept in proper working order.

Peak Demands

The water demands of individual customers, and in turn of local retail water agencies, fluctuate widely from day to day and throughout the year. The District's general policy is to provide sufficient system capacity so that in the peak-use summer months, treated water can be delivered at a rate of 180 percent of the then current annual volume expressed as an equivalent uniform flow rate over the full year. Historically, the District has contracted to meet three-day peak demands of up to 205 percent of the annual amount contracted for expressed as an annual flow. In recent contracts, however, the District has included the provision that during the period from July 1, 1979 to June 30, 1990, the District may limit the maximum flow rate for each Contractor to 180 percent of its then current annual amount expressed as an annual uniform flow rate. This provides a basic level of peaking (180 percent) for treated water deliveries, and encourages treated water contractors to meet additional peaking needs from their own production and storage facilities. More specific information regarding the retail water agencies peak demands can be found in their respective plans under the Act.

CHAPTER IX

INCENTIVES TO ALTER WATER USE PRACTICES

The District, as a wholesale water agency, does not work directly with retail water customers. It does, however, provide information to its retail water agencies and work cooperatively with them in efforts to inform and encourage the public in ways to achieve water conservation. The District has used various means to alter water use practices, including providing retrofit kits, distributing water conservation literature working with local public school systems, providing speakers for local public and private groups, and participating in promotional and advertising campaigns. These efforts are discussed extensively in Chapter IV.

CHAPTER X

CHANGES IN PRICING, RATE STRUCTURES, AND REGULATIONS

The District's pricing policies and rate structures have been geared toward providing adequate revenues to enable the District to obtain sufficient water supplies to meet current and future needs, and to construct, operate, and maintain appropriate treatment and distribution facilities on a timely basis as needed. Furthermore, the District has developed and applied its pricing policy and water rate structures, within its overall water management program, in a manner to encourage the efficient use of water.

In 1971 the District's Board of Directors, upon recommendation of the Santa Clara Valley Water Commission, adopted the current water pricing policy. This pricing policy incorporates two important concepts in water resources management: (1) a water pooling concept in which water for a given zone of benefit is considered a single commodity with a uniform value regardless of source or cost and (2) a water management concept in which the user pays for benefits received.

Where it is possible to determine the benefits a user receives directly, the pricing policy establishes water charges. The District's major water charges are:

- A groundwater charge and equivalent basic user charge, which are associated with the benefit of water consumption. The groundwater charge is an excise applied to water that is extracted from the groundwater basin in water charge zones, while the basic user charge is applied to other types of water delivered within water charge zones. There are two rates, one for agricultural (Ag) water and one for municipal and industrial (M&I) water. Revenue from these charges pays for the general costs of providing water and for the capital costs of constructing in-county facilities either through "pay as you go" financing or through debt repayment of bonds and loans.
- A treated water surcharge, which is associated with the benefit of receiving treated water. It is levied in addition to the basic user charge on water delivered from the District's water treatment plants.

Several water supply benefits are general in nature serving all or large areas of the County. Some of these benefits are the availability of imported water to the County, recreation associated with the District's reservoirs, and the replenishment of the County's groundwater subbasins which has halted land surface subsidence and which provides a supply of water in drought periods. The District uses tax revenues to pay the costs of facilities and programs which produce general benefits.

The District receives a portion of the one percent Countywide tax revenues as allocated by the County Assessor based on pre-1978 District tax levies. The District also levies additional ad valorem taxes under Article XIII A of the State Constitution for the purposes of: a) paying prior approved general obligation bond debt service, and b) meeting part of the contractual obligations to the State for South Bay Aqueduct water. The District's major debt service tax is levied in specific zones of benefits while the State Water Project Tax is levied Countywide.

To fund the construction of new facilities the District has relied on both pay-as-you-go financing and long term debt financing from revenue bonds as authorized by the voters in 1977. The last remaining 1977 authorized revenue bonds were sold in April 1984. In January 1984, State legislation became effective which allowed the District to seek electorate authorization to issue revenue bonds by Board of Directors' approval. Santa Clara County voters approved this authorization in the November 1984 election.

At the present time, the North County area uses its groundwater subbasin and local surface supplies and also receives treated imported water from District facilities to meets its water needs. The North County area is subject to the District's water charges and water-related taxes previously discussed.

The South County area presently uses its two groundwater subbasins and local surface supplies. Treated, imported water is not available. The District provides some groundwater recharge facilities in the area but does not provide water treatment and distribution facilities. The total South County area now pays the District's water-related

Countywide taxes. Areas within the boundaries of the Gavilan Water Conservation District pay groundwater charges to that agency.

The District will consider levying groundwater charges in the South County area concurrently with the availability of San Felipe Division project water. The importance of project water to the area can readily be seen by comparing Table II-1 (water supplies) and Table II-2 (water needs). Based on average long-term water conditions, the area is in an overdraft situation and will be until the time project water becomes available. The District plans to construct additional recharge facilities for the San Felipe water and has already purchased some land for that purpose. The District's overall objective is to provide sufficient supplemental San Felipe water to meet local needs and eliminate groundwater overdraft on a long-term basis in the South County area.

CHAPTER XI

EVALUATION AND COMPARISON OF ALTERNATIVE WATER MANAGEMENT PRACTICES WITH EXPANDED OR ADDITIONAL SUPPLIES

The District and its retail water agencies are presently engaged in extensive water conservation activities and programs, as discussed in Chapter IV, and the costs of these efforts are presented. The District intends to continually evaluate its existing programs, and to explore future alternative water conservation and management practices in an ongoing review process.

Water conservation programs provide an excellent means of stretching existing supplies, but they create little or no new supplies within the service area and are not complete substitutes for local water development or importation projects to meet the needs of a growing urban population such as that within the District's service area. Therefore, the District has chosen to meet its needs by securing long-term water supplies and incorporating them into its effective water management program which emphasizes water conservation efforts.

The District's most recent new water supply source, the San Felipe Division, is estimated to meet the District's supplemental water needs until sometime well beyond the year 2000. The construction of the project is progressing on schedule and should be completed by mid-1987.

Concurrently, the District has been constructing its in-county local distribution facilities to convey water and provide water treatment as appropriate for the supplemental supply from the San Felipe project. These facilities, which are being built at a cost in excess of $150 million, should be ready in time to receive San Felipe water in 1987.

The District prepared exhaustive environmental documentation on the overall in-county distribution system. The Final EIR, San Felipe Water Distribution System was filed in March 1976. The EIR contains extensive information concerning the social and

economic settings, impact and mitigation of the system. In addition, the District subsequently prepared EIR's on specific projects which were elements of the overall system.

Expanded or Additional Water Supplies

The future outlook for expanded or additional long-term supplies of new water is uncertain at this time. There are, however, some alternative water management practices by others that would help provide additional water supplies to the District. These include: the execution and implementation of the CVP/SWP Coordinated Operation Agreement between the U. S. Bureau of Reclamation and DWR, and the use of interim CVP water by the SWP contractors.

Another major factor discussed in Chapter V, is the need to assure the future delivery of the full contractual amount (100,000 acre-feet per year) of SWP water to the District. This will require that sufficient SWP facilities be built to produce a dependable yield of 4.2 million acre-feet per year. It is essential that the SWP be completed in a timely manner to avoid water shortages to the District and to the other 29 State Water Contractors.

The District will continue its efforts to firm-up or increase its long-term water supplies, and to manage these supplies more effectively. Once again, the District views water conservation programs as valuable tools for stretching existing water supplies and possibly delaying the time when specific facilities may be needed but not as complete substitutes or alternatives for local water development or importation projects which provide new water supplies for the District's service area.

APPENDIX A

ASSEMBLY BILL NO. 797, CHAPTER 1009

STATUTES OF 1983

Assembly Bill No. 797

CHAPTER 1009

An act to add and repeal Part 2.6 (commencing with Section 10610) to Division 6 of the Water Code, relating to water conservation.

[Approved by Governor September 21, 1983. Filed with Secretary of State September 22, 1983.]

LEGISLATIVE COUNSEL'S DIGEST

AB 797, Klehs. Water: management planning.

(1) Under existing law, local water suppliers may, but are not required to, adopt and enforce water conservation plans.

This bill would require every urban water supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually to prepare and adopt, in accordance with prescribed requirements, an urban water management plan containing prescribed elements. The bill would require the plan to be filed with the Department of Water Resources, and would require the department to annually prepare and submit to the Legislature a report summarizing the status of the plans. The bill would require each supplier to periodically review its plan in accordance with prescribed requirements, would specify requirements for actions or proceedings arising under the bill, and would specify related matters.

The bill would make legislative findings and declarations in this connection.

The provisions of the bill would remain in effect only until January 1, 1991.

(2) Article XIII B of the California Constitution and Sections 2231 and 2234 of the Revenue and Taxation Code require the state to reimburse local agencies and school districts for certain costs mandated by the state. Other provisions require the Department of Finance to review statutes disclaiming these costs and provide, in certain cases, for making claims to the State Board of Control for reimbursement.

This bill would impose a state-mandated local program as its requirements would be applicable to local public agencies.

However, the bill would provide that no appropriation is made and no reimbursement is required by this act for a specified reason.

The people of the State of California do enact as follows:

SECTION 1. Part 2.6 (commencing with Section 10610) is added to Division 6 of the Water Code, to read:

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PART 2.6. URBAN WATER MANAGEMENT PLANNING

CHAPTER 1. GENERAL DECLARATION AND POLICY

10610. This part shall be known and may be cited as the "Urban Water Management Planning Act."

10610.2. The Legislature finds and declares as follows:

(a) The waters of the state are a limited and renewable resource subject to ever increasing demands.

(b) The conservation and efficient use of urban water supplies are of statewide concern; however, the planning for that use and the implementation of those plans can best be accomplished at the local level.

10610.4. The Legislature finds and declares that it is the policy of the state as follows:

(a) The conservation and efficient use of water shall be actively pursued to protect both the people of the state and their water resources.

(b) The conservation and efficient use of urban water supplies shall be a guiding criterion in public decisions.

(c) Urban water suppliers shall be required to develop water management plans to achieve conservation and efficient use.

CHAPTER 2. DEFINITIONS

10611. Unless the context otherwise requires, the definitions of this chapter govern the construction of this part.

10611.5. "Conservation" means those measures that limit the amount of water used only to that which is reasonably necessary for the beneficial use to be served.

10612. "Customer" means a purchaser of water from a water supplier who uses the water for municipal purposes, including residential, commercial, governmental, and industrial uses.

10613. "Efficient use" means those management measures that result in the most effective use of water so as to prevent its waste or unreasonable use or unreasonable method of use.

10614. "Person" means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of such an entity.

10615. "Plan" means an urban water management plan prepared pursuant to this part. A plan shall describe and evaluate reasonable and practical efficient uses and conservation activities. The components of the plan may vary according to an individual community or area's characteristics and its capabilities to efficiently use and conserve water. The plan shall address measures for residential, commercial, governmental, and industrial water management as set forth in Article 2 (commencing with Section 10630) of Chapter 3. In addition, a strategy and time schedule for

implementation shall be included in the plan.

10616. "Public agency" means any board, commission, county, city and county, city, regional agency, district, or other public entity.

10617. "Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems subject to Chapter 7 (commencing with Section 4010) of Part 1 of Division 5 of the Health and Safety Code.

CHAPTER 3. URBAN WATER MANAGEMENT PLANS

Article 1. General Provisions

10620. (a) Every urban water supplier serving water directly to customers shall, not later than December 31, 1985, prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640).

(b) Every person that becomes an urban water supplier after December 31, 1984, shall adopt an urban water management plan within one year after it has become an urban water supplier.

(c) An urban water supplier indirectly providing water to customers may adopt an urban water management plan or participate in areawide, regional, watershed, or basinwide urban water management planning; provided, however, an urban water supplier indirectly providing water shall not include planning elements in its water management plan as provided in Article 2 (commencing with Section 10630) that would be applicable to urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies.

(d) An urban water supplier may satisfy the requirements of this part by participation in areawide, regional, watershed, or basinwide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation and efficient water use.

(e) The urban water supplier may prepare the plan with its own staff, by contract, or in cooperation with other governmental agencies.

10621. Each urban water supplier shall periodically review its plan at least once every five years. After the review, it shall make any amendments or changes to its plan which are indicated by the review. Amendments or changes in its plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).

Article 2. Contents of Plans

10630. It is the intention of the Legislature, in enacting this part, to permit levels of water management planning commensurate with the numbers of customers served and the volume of water supplied.

10631. A plan shall include all of the following elements:

(a) Contain an estimate of past, current, and projected water use and, to the extent records are available, segregate those uses between residential, industrial, commercial, and governmental uses.

(b) Identify conservation measures currently adopted and being practiced.

(c) Describe alternative conservation measures, if any, which would improve the efficiency of water use with an evaluation of their costs and their environmental and other significant impacts.

(d) Provide a schedule of implementation for proposed actions as indicated by the plan.

(e) Describe the frequency and magnitude of supply deficiencies, including conditions of drought and emergency, and the ability to meet short-term deficiencies.

10632. In addition to the elements required pursuant to Section 10631, a plan projecting a future use which indicates a need for expanded or additional water supplies shall contain an evaluation of the following:

(a) Waste water reclamation.

(b) Exchanges or transfer of water on a short-term or long-term basis.

(c) Management of water system pressures and peak demands.

(d) Incentives to alter water use practices, including fixture and appliance retrofit programs.

(e) Public information and educational programs to promote wise use and eliminate waste.

(f) Changes in pricing, rate structures, and regulations.

10633. The plan shall contain an evaluation of the alternative water management practices identified in Sections 10631 and 10632, taking into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors.

Evaluation of the elements in Section 10632 shall include a comparison of the estimated cost of alternative water management practices with the incremental costs of expanded or additional water supplies, and in the course of the evaluation first consideration shall be given to water management practices, or combination of practices, which offer lower incremental costs than expanded or additional water supplies, considering all the preceding evaluation factors.

Article 3. Adoption and Implementation of Plans

10640. Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630).

The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

10641. (a) An urban water supplier required to prepare a plan may consult with, and obtain comments from, any public agency or state agency or any person who has special expertise with respect to water conservation and management methods and techniques.

(b) In order to assist urban water suppliers in obtaining needed expertise as provided for in subdivision (a), the department, upon request of an urban water supplier, shall provide the supplier with a list of persons or agencies having expertise or experience in the development of water management plans.

10642. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

10643. An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.

10644. An urban water supplier shall file with the department a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be filed with the department within 30 days after adoption.

The department shall annually prepare and submit to the Legislature a report summarizing the status of the plans adopted pursuant to this part.

CHAPTER 4. MISCELLANEOUS PROVISIONS

10650. Any actions or proceedings to attack, review, set aside, void, or annul the acts or decisions of an urban water supplier on the grounds of noncompliance with this part shall be commenced as follows:

(a) An action or proceeding alleging failure to adopt a plan shall be commenced within 18 months after that adoption is required by this part, or within 18 months after commencement of urban water service by a supplier commencing that service after January 1, 1984.

(b) Any action or proceeding alleging that a plan, or action taken pursuant to the plan, does not comply with this part shall be

commenced within 90 days after filing of the plan or amendment thereto pursuant to Section 10644 or the taking of that action.

10651. In any action or proceeding to attack, review, set aside, void, or annul a plan, or an action taken pursuant to the plan by an urban water supplier on the grounds of noncompliance with this part, the inquiry shall extend only to whether there was a prejudicial abuse of discretion. Abuse of discretion is established if the supplier has not proceeded in a manner required by law or if the action by the water supplier is not supported by substantial evidence.

10652. The California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) does not apply to the preparation and adoption of plans prepared and adopted under this part. Nothing in this part shall be interpreted as exempting projects for implementation of the plan or for expanded or additional water supplies from the provisions of the California Environmental Quality Act.

10653. The adoption of a plan shall satisfy any requirements of state law, regulation, or order, including those of the State Water Resources Control Board, for the preparation of water management plans or conservation plans; provided, that if the State Water Resources Control Board requires additional information concerning water conservation to implement its existing authority, nothing in this part shall be deemed to limit the board in obtaining that information. The requirements of this part shall be satisfied by any water conservation plan prepared to meet federal laws or regulations after the effective date of this part, and which substantially meets the requirements of this part, or by any existing water management or conservation plan which includes the contents of a plan required under this part.

10654. All costs incurred by an urban water supplier in developing or implementing its plan shall be borne by it unless otherwise provided for by statute.

10655. If any provision of this part or the application thereof to any person or circumstances is held invalid, that invalidity shall not affect other provisions or applications of this part which can be given effect without the invalid provision or application thereof, and to this end the provisions of this part are severable.

10656. This part shall remain in effect only until January 1, 1991, and as of that date is repealed, unless a later enacted statute, which is chaptered before January 1, 1991, deletes or extends that date.

SEC. 2. No appropriation is made and no reimbursement is required by this act pursuant to Section 6 of Article XIII B of the California Constitution or Section 2231 or 2234 of the Revenue and Taxation Code because the local agency or school district has the authority to levy service charges, fees, or assessments sufficient to pay for the program or level of service mandated by this act.

O

APPENDIX B

WATER CONSERVATION AND WATER SAVINGS PROGRAM

RELATING TO USE OF

SAN FELIPE PROJECT WATER

IN SANTA CLARA COUNTY

BY

SANTA CLARA VALLEY WATER DISTRICT

REVISED NOVEMBER 1979

DISTRICT BOARD OF DIRECTORS

Joe Pandit	District 1	James J. Lenihan	District 5
Patrick T. Ferraro	District 2	Sig Sanchez	At Large
Robert W. Gross	District 3	Audrey H. Fisher, Vice Chairman	At Large
Joseph H. Donohue, Chairman	District 4		

Purpose

This report presents information concerning water management, water use evaluation, water conservation, and water savings activities by the District relating to the use of San Felipe Project Water in Santa Clara County (District and County of Santa Clara boundaries are coterminous). It was prepared in response to a letter dated July 14, 1978 from the Mid-Pacific Regional Office of the U.S. Bureau of Reclamation requesting that the District: 1) evaluate its present level of water use to determine where water might be conserved, and 2) report steps it has taken and intends to take to promote the conservation of water provided from and through federal facilities.

Water Management Program

The District has an effective water resources management program. This program includes monitoring and evaluating water use and water supplies; analyzing and updating projected water needs; and planning and implementing projects to meet the needs of the County. A major objective of the management program is to coordinate and optimize the use of the District's total water supplies, including local surface water, groundwater, imported water, and reclaimed wastewater.

The District manages locally developed surface water supplies, local groundwater supplies, and imported water supplies from the South Bay Aqueduct of the State Water Project in conjunction with deliveries from the Hetch Hetchy Aqueduct of the City and County of San Francisco. In addition, reclaimed wastewater is used or is planned to be used for agricultural and open space irrigation and industrial uses in several parts of the Valley, thus releasing potable water for higher uses and reducing the need for "new" water.

Most of the local surface water supplies and a portion of the South Bay Aqueduct supplies are recharged into the local goundwater basin. The remaining portion of South Bay Aqueduct water is treated at District facilities and distributed for domestic and other uses. The Hetch Hetchy water supply is delivered into a number of city distribution systems without additional treatment.

The District has extensive conveyance facilities for both raw and treated water and, accordingly, there is considerable flexibility in the operation of its facilities.

The District wholesales treated water to various public and private agencies serving 13 cities and portions of the unincorporated area in the county. Each of these agencies has additional distribution facilities to provide retail service.

Water Use

The District's "Master Plan, Expansion of In-County Water Distribution System", dated December 1975, is an example of its continuing effort to evaluate present water use and trends, and to plan for effectively meeting the future needs of the County. The Master Plan, however, was based on analyses made in 1972 and 1973. Since then the various cities in the county, and the County of Santa Clara, have updated and refined their respective master plans reflecting their projected land use changes and population growth. In cooperation with the County, the District compiled a parcel-by-parcel vacant and agricultural land inventory reflecting anticipated land use changes for each year to the year 2020. From this inventory, the District determined the net anticipated

incremental water need resulting from the conversion of each parcel. The annual incremental increases in water needs were then totaled by years and by service areas and added to that service area's recorded or estimated water use in 1975 (the year 1975 was selected as the base year because it is considered a near-average water year).

Water Projection Assumptions

In projecting the District's future water needs, several assumptions were made which would tend to produce low values. If these assumptions do not materialize, the District's water needs will be substantially higher than those indicated in the Master Plan. These assumptions were as follows:

1. The District used the lowest of a series of population projections developed by the Santa Clara County Planning Department. The projections assumed a birth rate equivalent to a zero population growth with various increases in population due to three net annual immigration rates. These three rates represented "reasonable high", "expected", and "reasonable low" projections. The District used the "reasonable low" projections. These values, in turn, were the basis for projecting both residential, and commercial and industrial water use.

2. The District assumed that per capita water use would not increase with time. This assumption is contrary to past and current trends.

3. Residential outside water use was assumed to decrease in the future based on greater voluntary use of drought resistant plants and improved irrigation methods.

4. A groundwater extraction charge was considered in effect in the South Valley (Coyote and Llagas) Groundwater Sub-Basins. This assumption was included by using measured agricultural water application factors from the Santa Clara Valley Groundwater Sub-Basin in determining the South Valley water needs. The effect of this assumption is an estimated 25 percent decrease in South Valley agricultural water consumption.

All of the above assumptions have the effect of reducing estimates of future water needs and in fact require that the District have an effective water savings program.

Hetch-Hetchy

In determining the availability of a water supply to meet the above estimated needs, the District assumed that Hetch Hetchy water deliveries in Santa Clara County would increase from the current amount of about 50,000 acre-feet per year to a maximum of about 64,000 acre-feet per year by 2020. The District, however, is not a party to the Hetch Hetchy water supply contracts which are between San Francisco and various suburban cities and public entities. The Hetch Hetchy water users are currently involved in litigation regarding differential pricing between the suburban users and San Francisco users. The Hetch Hetchy water supply contracts terminate during the period 1980-1982. Negotiations to extend these contracts have been halted by San Francisco because of the current litigations. The availability of the supplemental 14,000 acre-feet, used in the District's estimate, is dependent upon the successful renegotiation of the Hetch Hetchy water supply contracts.

South Bay Aqueduct

The District also assumed that it would receive its maximum contracted entitlement amount of 100,000 acre-feet per year from the South Bay Aqueduct of the State Water Project. The District's present entitlement is 88,000 acre-feet per year, and after 1988 is scheduled to increase by 2,000 acre-feet per year to full entitlement by 1994. The availability of the supplemental 12,000 acre-feet, used in the District's estimate, is dependent upon the timely implementation of future State Water Project storage facilities and operations to augment the present supply.

Water Conservation

The term "water conservation", as used in this report, refers to programs to manage and make the best use of water available to the District from all sources. This is different than "water savings" programs which refer to efforts to reduce water use; these are discussed later in this report.

The District's water conservation program, an integral part of its overall water management activities, includes the following:

1. Local water storage facilities.

   a. The District has constructed storage reservoirs on most of the major streams to retain seasonal runoff which later is released for groundwater recharge and direct surface irrigation. The District owns and operates eight dams and reservoirs with a combined storage capacity of about 155,000 acre-feet. Other public agencies in the county have constructed additional reservoirs with a total storage capacity of about 24,000 acre-feet.

   b. Alternative sites for additional surface storage have been studied extensively and are summarized in the District's Master Plan. These studies analyzed possible new reservoir sites, the enlargement of existing reservoirs, and various combinations of the two. The studies showed that the cost of developing a yield greater than 25,000 acre-feet would be uneconomical. With a total projected water deficit estimated to be at least 145,000 acre-feet by the year 2020, the additional yield from local developments could satisfy only a small part of the District's supplemental need.

2. Wastewater reclamation - Reclaimed wastewater is being used in portions of Santa Clara County for agricultural and open space irrigation. This will be expanded in the near future to include industrial uses. The use of this lesser quality water as a replacement for potable water reduces the need for "new" water supplies. The District has participated in extensive studies regarding reclamation, and has worked closely with local public agencies, and appropriate State and Federal agencies in these efforts. The following summarizes the District's reclamation projects and studies.

   a. The District has constructed and is operating a demonstration and research project consisting of an advanced wastewater reclamation plant and well injection/extraction system to establish a freshwater barrier to prevent further saltwater intrusion in the shallow groundwater basin along the Palo Alto bayfront area. This project also supplies or will supply water for landscape irrigation and industrial uses.

b. The District cosponsored construction of the Gilroy Reclamation Facility, which will eventually produce about 1500 acre-feet per year of reclaimed sewage water for agricultural and open space irrigation in the South Valley area.

c. Milpitas-North San Jose Water Reclamation Study - The District completed a study of water reuse in a 36-square-mile area of northern Santa Clara Valley. The Study area includes North San Jose and portions of Santa Clara and Milpitas. The study found that effluent water from the San Jose-Santa Clara Water Pollution Control Plant could be used for agricultural and open space irrigation, and industrial uses. This market will be served by the three Cities - San Jose, Santa Clara, and Milpitas - through a dual distribution system to be constructed by the Cities.

d. Santa Clara Valley Water Reuse Study - The District is the lead agency in this joint study with the State Department of Water Resources. The study analyzed the use of reclaimed water from the San Jose-Santa Clara Water Pollution Control Plant in the Central and Southern Santa Clara Valley areas for agricultural and open space irrigation, and industrial uses. Unfortunately because of high total dissolved solids, especially sodium, the water cannot be used without dilution with better quality water or additional treatment to remove the offending chemicals. This makes the project uneconomical for direct irrigation uses. The study is continuing to see if other uses for the water can be found.

e. Gilroy Phase II Study - This study, in which the District is a participant, is examining the possibilities of reclaiming additional water from the Gilroy sewage facilities for multiple purpose use in the Gilroy area. This would be used in addition to Item b above.

f. Bay Area Regional Water Reclamation Study - This study is evaluating the potential for using reclaimed wastewater generated in the San Francisco Bay area both locally in the Bay area and in the Central Valley. The District is participating in this study with a number of other agencies under a joint exercise of powers agreement.

Although additional local water storage facilities and wastewater reclamation facilities offer potential supplemental water supplies, these sources could satisfy only a small portion of the District's estimated future water needs. The District's Master Plan studies indicate that the San Felipe Project is the most viable source of supplemental water to provide the District an adequate future water supply.

The District and the Department of Water Resources reached an understanding in 1975 whereby the District indicated that it was willing to allow its maximum annual contracted entitlements of San Felipe water deliveries (152,500 acre-feet) and South Bay Aqueduct water deliveries (100,000 acre-feet) to be limited to 137,500 and 95,000 acre-feet, respectively, unless a determination was made before January 1, 1990 that the District's supplemental water needs above these reduced contract amounts could not feasibly be met by wastewater reclamation.

In the industrial sector, recycling of water has already received a great deal of attention by some industries in their effort to control waste discharges to avoid penalties for contributing to water pollution. It appears that the water reclamation studies and projects cited above will result in a supplemental supply of reclaimed water suitable for

meeting a significant portion of the industrial water requirements in the Santa Clara Valley area.

Water Savings

The term "water savings" as used in this report refers to reductions in water use. Such reductions enable available water supplies to serve more people, and reduce the amount of supplemental supplies necessary to meet future needs.

Prior to the 1976-77 drought, the District water resources management program included efforts to achieve water savings. For example, groundwater extractions have been monitored and a groundwater extraction charge levied for a number of years in the northerly portion of the District. This is the urban portion of the District and accounts for about 77 percent of the total District water use. When this charge was first instituted in the 1960's, the total municipal and industrial (M&I) water consumption in the area decreased by about 12 percent.

In October 1975, before the drought, the District authorized the firm of Metcalf and Eddy, Inc., to investigate and evaluate available water savings methods and their effectiveness. The results of the study were used by the District in developing and implementing a water savings program.

The years 1976 and 1977 were the driest two-year period in the area's 150-year history. During this drought period, the District took strong actions to achieve water savings. The following outlines the District's actions and plans regarding water savings.

1. The District implemented an ambitious program which was aimed toward creating positive relations with various publics which would support water savings efforts during and beyond the drought. Program activities included:

   a. Working with water purveyors to encourage reduction of water use and elimination of water waste, both in their operations and in water use by the public.

   b. Offering water conservation curriculum materials for classroom training to all public and private schools in the County. This is a long-range program commitment, planned to encourage water consciousness in students, which is planned to continue for at least the next 10 to 15 years.

   c. Presenting water conservation programs to students and to service clubs throughout the Valley.

   d. Obtaining changes in local building codes to facilitate the use of water saving shower and faucet devices. This program is estimated to save about 20,000 acre-feet annually by the year 2020. The state's mandate for the use of low-flush tiolets provided additional water savings.

   e. Distributing large quantities of conservation brochures and promotional items such as buttons and bumper stickers.

   f. Working closely with the news media to distribute drought and conservation information.

g. Showing conservation films at area theaters.

h. Developing improved public awareness of the existence of the District and the services and information it offers relative to saving water and reducing water waste.

2. In early 1977, in the midst of the drought, the projected water supply for 1977 for the District was estimated at 75 percent of normal. The District requested a 25 percent voluntary reduction in water use by Santa Clara County citizens. The District also outlined and promulgated specific rules to help eliminate water waste. Drastic action was not necessary, however, because the citizens responded with a reduction of 24 percent over 1976 use.

3. During the drought, the District did have a contingency water savings program in the event that the required reductions were not achieved voluntarily. The proposed program included a mandatory water savings ordinance for implementation by the cities and the County, should it have become necessary.

4. When it became apparent in early 1978 that an adequate water supply was available for meeting 1978 needs, the District called upon the citizens of the District to maintain permanently a water savings of at least 10 percent on the basis of pre-drought levels of use in order to ensure a balanced water supply for the future. The District supports this goal by continuing to provide the type of education programs and leadership such as outlined in Item 1 above.

5. The District is developing plans for implementing a groundwater extraction charge program in the South Valley area similar to the program in the North Valley. As mentioned earlier in this report, this factor has already been taken into account in projecting South Valley water needs.

6. The District is conducting an educational program directed toward providing a continuous flow of information to the public regarding the need for and methods of saving water. The long-range aspect of this program looks to the future when water savings will be a way of life and an accepted means of extending the District's water supply.

7. The District's long-range water savings program also includes consideration of modifications of water pricing policy.

Summary and Conclusions

1. The District has a sound water resources management program in operation, and water conservation and water savings are vital elements of it. The program includes monitoring and evaluating water use and water supplies; analyzing and updating projected water needs; and planning and implementing projects to meet the needs of the District.

2. The effectiveness of the water management program was demonstrated when the District was able to provide sufficient water supplies to protect Santa Clara County from disastrous impacts during the 1976-77 drought, which was one of the worst droughts in the history in California. This was accomplished through the coordinated use of surface and groundwater reservoirs, imported water supplies, water reclamation, and an effective water savings program.

3. Extensive studies, as outlined in the District's Master Plan, conclude that the San Felipe Project is the most viable source of supplemental water to provide the District an adequate future water supply. San Felipe water is incorporated into the District's total water supply and will be managed prudently under the District's water resources management program. This important supplemental supply will help provide an even greater level of protection against adverse impacts of future droughts.

APPENDIX C

KIT DISTRIBUTION PROJECT IN SANTA CLARA COUNTY

KIT DISTRIBUTION PROJECT IN SANTA CLARA COUNTY

BACKGROUND: In mid-1980 DWR's Office of Water Conservation and Santa Clara Valley Water District opened discussions about a kit distribution project in Santa Clara County, and decision was made late in the year to mail kits to the estimated 475,000 households in Santa Clara County. Late in the year the City of San Jose, as part of an effort to reduce flows to its sewage treatment plant, joined the DWR/District campaign. The District convinced DWR to hire a San Jose-area public relations firm to undertake a major campaign instead of simply running ads and holding a press conference set up by a San Diego PR/AD agency, as had been DWR's standard procedure in previous campaigns. City and District also convinced DWR to double the size of the kit to two sets of restrictors and two displacement bags.

CAMPAIGN GOAL: To reduce consumption of water and improve awareness of water supply system by promoting installation of water conservation kit devices.

CAMPAIGN FOCUS: To stress the individual benefits of installing kits, i.e., having adequate future water supply and saving on household energy bills. Campaign theme: "SAVE WATER--SAVE ENERGY--SAVE MONEY".

MAJOR CHALLENGE: The major challenge was to justify, in the minds of county residents, their installation of the kits following three wet winters. Public education was imperative in these areas: the difference between rainfall and useable water; the need to protect the aquifers by not overdrafting them; the certainty of future droughts; the huge costs of energy to power the water supply system; and on the individual household savings possible through efficient use of hot water.

TIME FRAME: April, May, June, 1981. Actual kit mailing May 18-23.

CAMPAIGN ELEMENTS UTILIZED:

- Media Editorial Strategy/Indoctrination Sessions
- Kit Kick-Off Media Luncheon
- Planned Media Events/Publicity
- Radio and TV Talk Show Appearances
- Audio-Visual Materials:
  - Television Public Service Announcements
  - Radio Public Service Announcements
  - Theater Public Service Announcements
- Corporate Financial Contributions
- Hispanic Community Communications
- Scout-O-Rama Appearance by Big Drop Mascot

Schools Effort:

- Skit with Big Drop, Bugs Bunny, Sylvester
- Literature
- District-By-District Competition for Computers
- Filmstrips

Kit Announcements:

- Statement Stuffers
- Billboards
- Readerboards
- Proclamations
- Bus Cards
- Posters
- Shopping Centers -
  - Giant Posters
  - Kit Demonstrations
- Supermarket Support
- Appliance Ad Tie-Ins
- Volunteer Groups/Publicity -
  - Churches Effort/Newsletters
  - Boy Scout/Girl Scout Support
  - Real Estate Board
  - Homeowners' Associations
- Apartment Owners
  - Direct Mail Advance Notice
  - Coordination with Association
  - Speech to Association Meeting

Advertising:

"It's Coming"
"It's Here"
"You've Got It--Please Use It"

COSTS: Total project cost was $644,000 ($508,000 DWR, $102,000 City of San Jose, $32,500 District, $1,500 City of Gilroy). This included all costs for administration, kits, mailing, public relations, advertising and research survey.

RESULTS: An estimated 475,000 kits were mailed, each containing two displacement bags, two sets of shower restrictors and two dye tablets. A research survey by Field Research Corporation revealed:

Kit Device	Total # Installed	Percent of Homes Which Installed	
		One Device	Both Devices
Displacement Bags	261,000	15%	20%
Shower Restrictors	105,000	12%	5%

Based on 2.7 persons per home, a savings of .69 gallons per flush, five flushes per day per person, .67 showers per day per person and three gallon per minute savings, DWR indicates that the savings in Santa Clara County will be 3.9 million gallons per day, or 4,400 acre feet per year, or 22,000 acre feet savings over an average life span of five years for the kits. This amounts to minimum net public savings of $896,000 over five years (based on 1981-82 District Groundwater M&I Charge of $70 per AF), without accounting for likely increases in water rates.

Santa Clara Valley Water District
ACWA Fall Conference
November 1981

APPENDIX D

EMERGENCY PUBLIC RELATIONS

1976-1977 DROUGHT

SANTA CLARA COUNTY, CALIFORNIA

EMERGENCY PUBLIC RELATIONS

1976-1977 Drought

Santa Clara County, California

PROBLEM: 1977 was a second consecutive drought year in the county--the driest known two-year period in the area's 150-year recorded history. In February, the water supply for the remaining 11 months was projected to be 25 percent less than normal demand from homes, institutions, industry, commerce and agriculture. Population: 1.2 million.

The Santa Clara Valley Water District Board of Directors declared an emergency, qualifying area ranchers and farmers for monetary relief from State and Federal disaster funds. But money was no source of water. The only "new" source was to stretch out the available, 75 percent-of-normal supply.

The Board had a choice: institute a rationing program that would include extreme fines for overuse, threatened cut in services, and other horror elements.

Or, they could adopt a program of voluntary conservation, relying on the ability of the agency to educate people about why reductions in water use were needed and how water could be saved. Voluntary conservation was selected--in spite of the fact that some three million other people elsewhere in the San Francisco Bay Area were already living under mandatory rationing imposed by agencies which didn't believe that large savings could be derived through public education.

INTENDED RESULTS:

1. To reduce community water use by 25 percent compared to 1976 by implementing a wide variety of conservation programs aimed at a variety of publics.

2. To create positive relations with publics which would support water conservation efforts during the and beyond the drought.

3. To improve public awareness of the existence of the Water District, its name, and its services.

ACTUAL RESULTS:

1. A total of 24 percent less water was used compared to 1976.

2. The District received complete cooperation from new friends in education, retail stores, restaurants, theaters and libraries, all of whom are continuing to participate in the program.

TOTAL COSTS: $93,900.

Cost per person served: $.07

HOW PROGRAM WAS IMPLEMENTED: Prior to the drought, water conservation was a small part of an existing public information effort. Upon declaration of the water supply emergency, the following program was conceived, approved by the Board and implemented:

1. Distribute water conservation education student workbooks and teacher guides to public and private schools, grades K-12, in the county.

2. Establish a team of previously unemployed educators through CETA to create conservation programs and present the programs to students throughout the county.

3. Present water conservation programs to area service clubs through use of a large District employee speakers bureau.

4. Distribute large quantities of conservation brochures and promotion items such as buttons and bumper stickers.

5. Work closely with print and broadcast news media to distribute drought and conservation information.

6. Encourage and participate in construction of one or two water/energy conservation demonstration homes in the area.

7. Distribute conservation films to area libraries and media centers for use by the general public and all schools.

8. Prepare mobile displays of conservation information and rotate to locations throughout the county.

9. Distribute 35mm copies of conservation films to area theaters on a rotating basis.

10. Develop a model building code requiring installation of water savings plumbing fixtures in future construction and help cities implement the revised building code.

11. Request all area restaurants to serve drinking water only on request and provide information about the program to restaurant patrons.

12. Participate in County Fair to distribute literature and promotional items, and display drought resistant plants.

13. Assist area retail stores with identifying and merchandising water savings plants and devices.

14. Increase District water facility tour program and use tours for disseminating conservation information.